INTEGRATING SOFT SKILLS WITH TECHNOLOGY IN ONLINE

POSTSECONDARY CAREER AND TECHNICAL EDUCATION

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INTEGRATING SOFT SKILLS WITH TECHNOLOGY IN ONLINE POSTSECONDARY CAREER AND TECHNICAL EDUCATION

A

PROJECT

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By

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Abstract

International and U.S. economic need for postsecondary training and degree attainment has fueled the demand for online courses and programs to meet the requirements of busy adults. Rapidly changing businesses and technologies necessitate that workers continually update skills and industry credentials. Employers want to hire workers who possess both technical skills and soft skills—people skills, attitudes, and values—and who can adapt to a culturally diverse, collaborative team workplace.

Higher education institutions must support faculty efforts to provide effective, quality programs and courses that prepare students for this work environment. Career and Technical Education (CTE) faculty are generally hired for their industry and workforce expertise and may need assistance transitioning to eLearning strategies. Thus, a condensed manual was created as a resource to assist new online postsecondary CTE instructors with identifying and selecting the most appropriate technology and tools for incorporating soft skills development into online courses.

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Acknowledgements

The completion of this Master's project and degree required hundreds of hours of work and many more hours of support. It was a humbling experience to have had so many others push me onward. It is with sincere gratitude that I acknowledge a few of these very special people.

For a majority of my life my mantra has been "I can do all things because of Christ who strengthens me" (Philippians 4:13, MEV Bible). I thank my Lord, Jesus Christ, for the love and strength to persevere on this seven-year journey despite an avalanche of personal and family issues.

It has not been easy to endure my long nights at the computer, my emotional outbursts of frustration, and the scheduling conflicts that have prevented me from attending family events. Nonetheless, my incredibly supportive husband, Dan, and daughter, Amy, have stayed by my side and cheered me on throughout this endeavor. Words cannot express how truly blessed I am to have you both in my life. Thank you.

Two decades of encouragement have come from my colleagues at Kodiak College. The atmosphere of camaraderie and dedication to students has been inspiring; you are all wonderful. I especially want to thank Kitty Deal, Lorraine Stewart, and Cindy Trussell for sharing long inspirational and philosophical talks, for discussing andragogical/pedagogical concerns about online teaching and learning, and for taking the time to provide critical review and thoughtful commentary for this project.

Reaching the end of this goal would not have been possible without the academic support and guidance of two compassionate and committed faculty: Jean Marcey and Dayna DeFeo. I am grateful to have been your student.

As a lifelong learner I've come to realize that education, like life, is grounded in the journey taken, not in the destination reached. I know my journey has not ended; I've simply reached one destination and am heading out to the next. A quote attributed to Confucius is a fitting conclusion for now: "It does not matter how slowly you go as long as you do not stop."

Dedication

In memory of Hazel Jean Lare, my mother, my friend, and my conscience. You instilled in me your servant's heart, your compassionate soul, and your love for reading and learning.

Chapter 1 Introduction

The journey to a Master of Science in Career and Technical Education (CTE) is a very personal and fervent one. This is not the venue for an outpouring of autobiographical history or traumatic events, yet it does lend itself to a few pieces of personal background to substantiate my project. Though the project may not be groundbreaking, it was developed with a passionate interest in its contents and application.

After ten years in retail, training, and customer service jobs, I decided to stay home with our children. We were a military family and relocated every few years. To help pay bills, I applied for part-time, entry-level positions several times, only to be told I was either over-qualified (too much experience for the position) or under-qualified (no credential or degree). Frustrated and hurt, I kept busy volunteering with local non-profit organizations while the children were in school. Then we transferred to Alaska.

Kodiak, Alaska, was different from any place I had ever been: rural, isolated, an island, and no malls! Once we settled in, I realized our high school student was having difficulty in English class—students were required to use computers for assignments. We did not own a computer, and I knew very little about them. It was the early 1990s, and at that time I discovered a local community campus of the University of Alaska Anchorage. I enrolled in an Introduction to Computers course, and then I was hooked. I took 1-credit computer courses back-to-back; I fell in love with technology.

I have always been an avid reader, and one day I decided to just wander through the college library. I stumbled across a book that looked interesting, so I checked it out

and took it home. *Workplace Basics: the Essential Skills Employers Want* (Carnevale, Gainer, & Meltzer, 1990) was one of the first non-fiction books I could not put down; its contents literally changed the course of my life. I now had a goal: I wanted to become a professional trainer or a teacher and help others get a job or start a career. My passion was ignited, and I was ready to set out on my journey.

Desire is great, but reality throws up roadblocks. While completing two Associate degrees, I researched options for getting a Bachelor's degree. We had just been assigned a second tour of duty on Kodiak, and Kodiak College did not have a 4-year degree program. Again I managed to stumble onto a path that changed my life. The University of Alaska Southeast had a satellite-delivered business program for military members, and they were just starting a distance program. The Internet was just opening up to the general public, and the World Wide Web was being born. I was hooked for the third time.

Wading my way through bureaucratic paperwork, petitions, and a variety of countless technological hurdles, I worked my way through to graduation. I was learning through and about technology—what would later become online education and then eLearning. That was twenty years ago, and I have been obsessed with eLearning and teaching ever since. It was a logical and impassioned decision to apply my love of learning, teaching, and technology toward this Master's project—the creation of a resource to help others improve their online teaching skills.

Problem Statement

While distance education has existed for more than 100 years in various forms, the increasing demand for online education access is fueled by current economic

conditions requiring ongoing workforce skills development, industry certifications, and lifelong-learning; concurrently, it strives to help people attain these by accommodating life factors and geographic isolation (Benson et al., 2004; Githens, Sauer, Crawford, & Wilson, 2012). The Babson Survey Research Group's 2013 annual survey reported 7.1 million students in the United States (33% of all higher education students) took at least one course online, and 66% of Chief Academic Officers believe online education is critical to the long-term strategic direction of their institution (Allen & Seaman, 2014). Current research on postsecondary online teaching and learning reveals some effective strategies and technologies, though there is a gap in the literature directly related to Career and Technical Education (CTE).

In addition to the demand for online education, employers want to hire workers who possess both technical skills and soft skills—personal habits, beliefs, attitudes, values, emotional intelligence, and interpersonal relationship abilities. Research studies from the mid-1980s to today have documented this demand (Carnevale et al., 1990; National Association of Colleges and Employers [NACE], 2014; Partnership for 21st Century Skills, n.d.). However, many employers do not believe that postsecondary institutions have done enough towards this demand, and there is a gap in the perspectives of employers and graduates in the level of skills developed for entry into the workforce (Hart Research Associates, 2015).

U.S. and global concerns.

Industry associations, trade magazines, newspaper articles, websites, and business gurus have been touting the need for soft skills development for over a decade. A

MindTools (n.d.) online article states that "while your technical skills may get your foot in the door, your people skills are what open most of the doors to come" (para. 6). In the competitive employment arena there are many applicants with technical skills, but it is the soft skills that can help them stand out. "Companies value soft skills because research suggests and experience shows that they can be just as important an indicator of job performance as hard skills" (Lorenz, 2009, para. 1). Academic research is beginning to look at this issue for determining how and where to address this need; findings are showing that soft skills should be integrated into coursework for all disciplines (Harris & Rogers, 2008; Rosenberg, Heimler, & Morote, 2012; U.S. Department of Labor [USDOL], 1999).

This is not just an issue for the United States; there is a global concern about the under-preparedness of employees for handling interpersonal and intercultural workplace responsibilities. The multinational organization School of Educators reported that "soft skills are identified to be the most critical skills in the current global job market" (Jain, 2009, para. 1). The International Journal of Training and Development devoted the entire September 2013 issue (Volume 17, Issue 3) to global research on soft skills. Furthermore, an Australian report noted "employers expressed quite clearly that the graduates did not meet their expectations in regard to their levels of employability skills" (Poon, 2014, p. 575). It appears that much work is needed in finding ways to effectively develop soft skills in conjunction with career and professional skills.

Alaska concerns.

No specific research devoted to online education and soft skills development for postsecondary education could be found during the development of this project. Alaska has included employability standards for K-12 education since 1998, which include soft skills development; these are also included in the state's Department of Education and Early Development's Alaska Standards. The Career Ready Alaska website provides an infographic flyer entitled *Want a Great Career? Alaskan Employers Expect* that specifies 12 skills/competencies, 9 work attitudes, and 7 work values, most of which could be classified as soft skills.

In 2010, three Alaska agencies—Department of Education and Early Development, Department of Labor and Workforce Development, and University of Alaska—released the *Alaska Career and Technical Education Plan: A Call to Action*, which included strategies for incorporating employability skills at all levels of education and training. State economic reports, which are released annually, show a high demand for health care and administrative jobs—jobs where well developed soft skills would be a distinct advantage. Obviously the state is concerned about the need for employability skills. A project for incorporating soft skills into CTE courses would be beneficial in meeting the needs of local employers, employees, and students, in addition to the faculty who teach the courses.

Purpose of Project

Originally this project was titled *Effective Strategies for Online Teaching in Postsecondary Career and Technical Education*. The plan was to develop a resource

guide to outline the most effective teaching strategies and match those with appropriate technology tools for online courses. Though in the tradition of most things technology-related, the plans changed.

While completing a graduate certificate program in eLearning, ideas for how I might contribute to the field of eLearning kept teasing my brain. At that time (2010) research publications were just starting to fill the literature; there was still plenty of room for expansion. Exploration of journals, books, and websites from 2010 to 2013 brought me to the realization that a number of people, institutions, and organizations were conducting studies on various aspects of online teaching and learning, which were just getting to the publication stage. I began to question my inquiry choice.

As I was writing a literature review on this topic for one of my educational research courses, I realized that two subjects did not show up often in my academic searches: CTE and soft skills (or employability skills). Here was a way to narrow my focus: I identified four parameters to keep within the confines of meeting the needs of rural Alaska. This new challenge was to merge online learning, teaching and learning, soft skills development, and CTE, and all was directed toward supporting instructors in small and isolated Alaskan locations, most of which probably have limited resources.

Melding the constraints into a user-friendly tool fueled my intellectual and creative energy and time. With no previous academic training in soft skills development, I embarked on a self-directed study plan to learn the basics. After a few months of work, I finally refashioned my project. The new goal was to create a resource to assist new

online postsecondary CTE instructors with identifying and selecting the most appropriate technology and tools for incorporating soft skills development into online courses.

Chapter 2 Review of Literature

A project of this scope required a review and distillation of literature from several fields: educational psychology, instructional design, general education, CTE, and technology. The areas of technology reviewed were those that related specifically to communication, teaching, and learning. Determining the relationships and connections among the research and theories of these fields was necessary to achieve the goal of the project.

Adult Learning

There is a wealth of literature on adult learning, with many varied components, theories, and processes. Merriam, Caffarella, and Baumgartner (2007) concluded that adult learning is not just a definition, but also the "configuration of learner, context, and process together [that] makes learning in adulthood distinctly different from learning in childhood" (p. 423). Malcolm Knowles brought the term "andragogy"—the art and science of teaching adults—into the educational literature in the United States in 1968.

Knowles' andragogical model is a set of six assumptions or principals about how adults learn: (a) the learner's need to know (why, how, and what); (b) the learner's self-concept (autonomous, self-directing); (c) the learner's prior experience (mental models, resources); (d) the learner's readiness to learn (developmental ability, life situations and needs); (e) the learner's orientation to learning (task/problem-centered, contextual to own life); and (f) the learner's motivation to learn (personal payoff, intrinsic value) (Knowles, 1984; Knowles, Holton, & Swanson, 2012). Adult learners need to know why they are learning a skill and how the skill will be useful for them in to develop intrinsic value or

motivation for learning. Knowledge of why and what is being learned provides the learner with the ability to *self-plan* learning, which in turn strengthens individual motivation and effort applied to the learning process (American Institutes for Research, 2011; Tough, 1993).

Learning occurs when knowledge is moved from the unknown, to being interacted within the presence of or guidance of others, to the realm of individual acquisition—what can be understood or done by one's self. This is the basis of Vygotski's Zone of Proximal Development and Social Development Theory (Moll, 2014). Relatedly, Bandura's (1977) Social Learning Theory focused on cognitive learning by observing and modeling from others. This is important for adult learning because "behavior is a function of the interaction of the person with the environment" (Merriam et al., 2007, p. 289). The environment of learning—the culture, context, and the activities—made learning situational, and required social interaction as part of transference of learning from classroom to life applications (Lave, cited by Culatta, 2013). Transference from academic settings to life's environments is the primary purpose of formal education and a critical component in deep learning (Bransford, Brown, & Cocking, 1999). These theories all relate back to Knowles' andragogical model and are key aspects of adult learning, which is influential in CTE.

Learners' predisposition for learning, their existing mental models (schema), and their cultural contexts are foundational components of Constructivist Theory (Bruner, 1996). People construct their own knowledge and applications for their skills (the transference) based on all the social, cultural, and physical influences around them.

Culture impacts the way people construct knowledge and can be a powerful influence on how knowledge is constructed and applied (Merriam et al., 2007). Educational paradigms vary based on their cultural context.

Western education has rooted most of its practices for teaching and learning around Bloom's (1956) three domains: cognitive (knowledge, intellectual abilities, technical skills), affective (attitudes, values, and beliefs), and psychomotor (muscular or motor skill). The frequently referred to *Bloom's Taxonomy*, which just concerns the cognitive domain, has been the primary element in creating learning objectives for decades. However, with the learners' need for social and cultural context of learning, the affective domain can no longer be minimized or ignored for learning outcomes. The affective taxonomy (Krathwohl, Bloom, & Masia, 1964) addresses the developmental levels of intrapersonal and interpersonal skills—what are commonly referred to today as components of soft skills or employability skills.

Neuroscience discoveries on the physiological activity and changes in our brains are also impacting our understanding of adult learning. A more holistic approach can be found in Caine, Caine, McClintic, and Klimek's 12 Mind/Brain Natural Learning Principles (2009), which blend neuroscientific, cultural, social, emotional, psychological, and developmental theories into a total learning system. Natural learning processes must be accounted for in adult learning environments, especially in online learning (Caine, 2010).

Online Learning

Though distance education has existed for over a century, educational research has primarily focused on observations in physical settings: classrooms and workplace environments. Advancements in electronic equipment and infrastructures unlocked an entirely new avenue of connection through the debut of the World Wide Web; thus online learning was born.

Distinguishing the terms.

The U.S. Department of Education (USDOE, 2010) uses only two terms—online learning and blended learning—in comparison studies. Moore, Dickson-Deane, and Galyen (2010) argue that the use of different terminology in distance education—distance learning, online learning, eLearning, and blended (or hybrid) learning—creates confusing and conflicting perceptions and expectations for teaching, learning, and assessment strategies, necessitating standardized terms for comparable measures to determine effectiveness and appropriateness of eLearning strategies. For purposes of clarity in this paper, "online learning" refers to any electronically or digitally delivered educational event, course, or program that can be completed entirely thought the delivery medium. Online learning in the University of Alaska system is commonly referred to as "eLearning;" these two terms are considered synonymous for this paper. "Blended learning" refers to any electronically or digitally delivered educational event, course, or program that is structured partly online and partly in a traditional classroom or other physical location.

Performance effectiveness.

Hundreds of studies over the past 25 years have researched the comparative effectiveness of traditional classroom and online delivery of courses. Longitudinal and meta-analysis reports state that results range from no significant difference (Burns, Duncan, Sweeney II, North, & Ellegood, 2013; Wagner, Garippo, & Lovass, 2011) to a 70% greater student performance in online courses (Shachar & Neumann, 2010). Burns et al. (2013) also showed that students completing an ensuing sequel course did significantly better in that course if they took the first course in either online or blended modes. Online learning has become recognized as a legitimate form of professional and higher education; 70.8% of postsecondary academic leaders reported that online learning is critical to their institution's long term strategy (Allen & Seamans, 2015).

Blended learning, which combines traditional and online instruction, outperformed either single method with "stronger learning outcomes" (USDOE, 2010, p. 19) and it enables a more in-depth learning experience (Brandt, Quake-Rapp, Shanedling, Spannaus-Martin, & Martin, 2010). Benson et al. (2004) found blended learning to be the most beneficial form of postsecondary program effectiveness in meeting the needs of adult learners for CTE industry certifications and careers in the fields reviewed. Blended learning functions best when knowledge-based learning is delivered online and physical skills-based learning is demonstrated and practiced in classroom or workplace settings.

Online Strategies and Best Practices

Ni (2013) points out that comparing delivery modalities needs to encompass more than just student grade measures and should "include a logical assessment of interaction,

effectiveness in achieving learning objectives, and student persistence" (p. 212). The quality and quantity of student interactions with content and the instructor may be greater in online modes due to the less restrictive time constrains than in a traditional class. This might lead to deeper understanding and greater internalization of content.

Chickering and Gameson's (1987) Seven Principles for Good Practice in Undergraduate Education have been considered as a basis for quality postsecondary instructional practices by several researchers. Batts (2008) applied this criteria to an investigation of faculty and student perceptions on the existence and value of online teaching strategies. Principles with the highest importance were prompt feedback, student-faculty contact, and high expectations. Principles of medium importance were active learning, diverse talents and ways of learning, and cooperation among students. The lowest priority principle was time on task.

Bailie (2011) conducted a sequel to his 2006 study on perceived importance of online instructional competencies for faculty. The top four of the 19 identified competencies were feedback skills, interpersonal communication, student engagement techniques, and content knowledge. The first three of these competencies fall into the soft skills (affective domain) category. Faculty could model these skills and refer to them in the context of demonstrating soft skills importance and development. Interestingly, the top priorities for students in studies by Batts (2008) and Bailie (2011) identified characteristics of instructional immediacy indicating a preference for connectedness to faculty (an adult learning social and cultural need) and to quality of instruction.

Postsecondary institutions are recognizing the need for quality assurance in online education and utilizing processes such as Quality Matters™ (QM) for assessing and ensuring quality and consistency in the structure of online and blended courses. QM measures the alignment of learning objectives to the course assessments, activities, and materials, and provide a reliable structure for evaluating effective learning and supporting student success (Brandt et al., 2010). This alignment structure is the basis for Wiggins and McTighe's (2005) backward design approach. To more effectively meet the industry certification and workplace performance needs of employers, instructors must start with the end in mind to ensure alignment of all educational components and sufficient activities and practices for quality of both the course and the students' abilities.

Online learning can be structured to meet all of Knowles' six principles of andragogy, thereby making it a viable option for programs and courses. Constructivist learning "is a good fit for e-learning because it ensures learning among learners" (Koohang, Riley, Smith, & Schreurs, 2009, p. 91), which cannot always be said about traditional classroom learning, especially in larger lecture courses. However, one national study concluded that "online occupational [CTE] programs are much less common than online courses overall…[and] the most common online programs are in subjects that are more easily taught online" (Githens, Crawford, & Sauer, 2010). Subjects that are more technology skills-based are a more obvious choice for teaching online.

Online Technology Tools

Technology changes rapidly, making selection of a specific software or tool challenging. Carlson et al. (2012) compared specific technology tools and new media for

ease of use, relationship to learning outcome achievement, and application to Angelo's Four Dimensions of Higher Learning: declarative, procedural, conditional, and reflective learning. Technologies were categorized into six types: wikis/web pages, audio/video-editing programs, social networking services, screen-recording software, synchronous web conferencing platforms, and 3D virtual worlds, each of which has a distinct purpose and application strategy. Carlson et al. (2012) warned that these technology types do not serve the same purpose, are not interchangeable, and do not have the same problem-solving abilities. Caution should be used in matching the category and specific tool to the pedagogical need.

Bower (2011) examined the competencies associated with synchronous web conferencing tools, a category that is rapidly growing in preference and size. Synchronous tools are more complex than asynchronous tools and require real-time decisions and adjustments in both teaching and technology features. Benefits of collaboration, communication, and community can be offset by misunderstandings and misuses of web conferencing tools by instructors or students, creating a "crippling impact on the learning episode" (p. 63) when training for use is insufficient.

Successfully matching andragogical teaching and assessment criteria with technology tools can be a difficult undertaking without assistance from an educational technologist or instructional designer. Mismatches or poor utilization of the tools can lead to learner and instructor frustration or the inability to reach the intended learning objectives of the course or program. Improvements in this area required the creation and implementation of more resources, guides, or professional development for faculty.

Soft Skills

A clear definition of soft skills, like online learning, has not been formally agreed upon. *Collins English Dictionary* defines soft skills as "desirable qualities for certain forms of employment that do not depend on acquired knowledge: they include common sense, the ability to deal with people, and a positive flexible attitude." The U.S. Department of Labor's Office of Disability Employment Policy (ODEP) simply refers to soft skills as workforce readiness skills. Blaszcynski and Green (2012) list other synonymous names as "essential skills, generic skills, key competencies…and emotional quotient (EQ) skills" (p. 1). Additionally, these have been called 21st Century Skills, employability skills, or interpersonal skills (Partnership for 21st Century Skills, n.d.; USDOE, n.d; USDOL, 1991).

Blaszcynski and Green (2012) stipulated that while some of these specific skills fall into the cognitive domain, such as time management and accountability, many others belong to the affective domain. Bancino & Zevalkink (2007) included soft skills of flexibility, social grace, respectfulness, and optimism within this domain. For clarity and distinction in this paper, the term "soft skills" will be primarily used and is considered to be synonymous with the terms "employability skills" and "21st Century skills." However, to keep within the original scope and work of others, both "employability skills" and "21st Century skills" terms will be used to appropriately reflect the research.

Educators and psychologists would probably disagree with the previous dictionary definition that states soft skills "do not depend on acquired knowledge." Skills that fall into the cognitive domain would depend on acquired knowledge, and those that

fall into the affective domain would merely require a different type of knowledge. Employers have been advocating the need for workers with soft skills for years (USDOL, 1991). Moreover, employers have indicated that postsecondary institutions are not meeting this need; thus, there must be ways to teach and measure the attainment levels of these skills (NACE, 2014; USDOL, 1991).

Employability skills are crucial to getting and keeping a job. Han [2015] maintains that "many college graduates haven't had a chance to learn or develop soft skills, and…are finding it difficult to land a job. Talented professionals with good hard skills…are often passed over for promotion due to gaps in their soft skills" (para. 1). She offers three reasons why these skills are invaluable to success in the workplace:

- Soft skills are the most difficult to master and will separate [individuals] from the masses;
- Soft skills are not taught well in school;
- Soft skills are what will get [individuals] promoted, especially to the executive level. (para. 5)

In their study of basic employability skills, Rosenberg et al. (2012) echoed Han's reasoning and postulated that "there may not be sufficient rigor in college courses to develop a disposition toward self-reliance [work ethic] before students enter the workforce" (p. 15). They concluded that underprepared graduates would have little chance at being hired and functioning well in the workplace.

Bedwell, Fiore, and Salas (2014) noted that there are "demonstrated relationships to effective performance across work domains…providing empirical support

underscoring the importance of interpersonal skills in multiple context." (p. 171). Interpersonal skills, as well as other soft skills, are multi-faceted and complex. Thus teaching and assessment strategies for 21st Century skills are complex, inter-related, and multi-dimensional—a one size fits all approach is not appropriate (Bedwell et al., 2014; Greenstein, 2012; Lai & Viering, 2012; ODEP, n.d.). Soft skills cannot be taught as single entities, either; they should be integrated throughout the curricula and disciplines (Blaszczynski & Green, 2010; McEwen, 2010; Rosenberg et al., 2012; Stoner & Milner, 2010). Consequently, this project advocates for including soft skills in all CTE courses and programs.

Research on assessing affective domain teaching and learning strategies is limited. The "affective domain is the least studied and most often overlooked of Bloom's three domains, mainly because of the subjectivity and complexity of the domain" (Carrigan, 2013, p. 64). Effective strategies for the development of soft skills from this domain are imperative for educating a productive workforce. Bedwell et al. (2014), Greenstein (2012), and Palloff and Pratt (2009) recommend the use of both simple and multi-dimensional rubrics as a valuable tool for determining levels of demonstrated skills. Carrigan's (2013) study identified 20 design strategies for online course development that are related to enhancing learning and developing skills in the affective domain; the most popular and productive strategies involved social networking (social media), specifically the wiki tool.

Soft skills are a vital concern for society and commerce in our current international and multinational marketplace. Our global economy is no longer restricted

by geographic or cultural boundaries; technology has opened up the world for communication and collaboration. Industries need workers who possess the skills to be productive and effective employees, which affects the curricula and methods utilized in CTE.

Career and Technical Education (CTE)

According to the *Glossary of Educational Reform*, "Career and technical education is a term applied to schools, institutions, and educational programs that specialize in the skilled trades, applied sciences, modern technologies, and career preparation" (para. 1). More simply (though less accurately), CTE prepares individuals for the workplace. Originally known as vocational education—and occasionally called that still—CTE had its formal start in the U.S. with the 1862 Morrill Act that established land-grant colleges to prepare workers for and improve the industries of agriculture and mechanical arts (Gordon, 2008).

From 1996 to 2000 a consortium of several government agencies participated in the Career Clusters initiative, to classify and organize efforts for education and development of the workforce. The result was the U.S. Department of Education model consisting of 16 Career Clusters linked to at least 74 career pathways (Association of Career and Technical Education, 2015; Gordon, 2008). These pathways link academic, technical, job-related, and employability skills objectives into a cohesive educational strategy spanning from high school though postsecondary institutions (9^{th} grade to 14^{th} grade and beyond).

Benson et al. (2004) and Fletcher, Djajalksana, and Eison (2012) agreed that very little research has been explored at the postsecondary level for CTE instruction. The expansiveness of CTE fields makes any large-scale research costly and difficult. The Association for Career and Technical Education's (ACTE) website (http://www.acteonline.org) hosts a clearinghouse for any research or publications related to CTE; still the quantity of information available is small. Much of their work surrounds support for educators, policy advocacy, and issues of funding and grant support. More research is warranted, especially research relating to postsecondary online educational best practices.

Fletcher et al. (2012) only examined only the superficial structure of the employed pedagogies, and so far there has been no research on signature pedagogies in the CTE field. Specialized pedagogies or andragogies for individual careers or a single career cluster are nonexistent for some occupations and beginning to grow in others, such as business or health sciences. It would be advantageous for more CTE industries and educational institutions to support research efforts in teaching strategies specifically designed or proven valuable in those fields.

Concerns for CTE online.

Shulman's (2005) signature pedagogies—the characteristics of teaching professions or vocations—encompass surface structure (how to act/perform), deep structure (how to think), and implicit structure (how to act ethically and morally). These are critical for developing professional practices and values in CTE fields and can be difficult to teach and assess in the online environment (Fletcher et al., 2012). These

pedagogies align with the affective domain and soft skill development; consequently, more resources are needed for investigating and identifying signature pedagogies (or andragogies) in order for students to benefit from them in their education or training.

Student achievement relies on mastery of technical skills that require psychomotor and cognitive development and the transference of those skills to a workplace environment. Traditional CTE instruction includes task and workplace simulations, which allow for interpersonal skill development. Online students are not often given the opportunity for these kinds of interactions or simulations. These students can feel isolated due to their remote locations and separation from others, especially the instructor (Benson et al., 2004). Soft skills integration through social media tools would foster interactive relationships among the students, helping to alleviate some of these feelings (Carrigan, 2013).

Githens et al. (2012) found that few online programs exist for skills-based occupations. Individual online occupational courses are more common than complete programs, and the majority of these courses do not require development of manipulative skills. The most frequently taught programs were in Business Management and Administration, Information Technology, Health Science, and Human Services.

Strategies used.

Exemplary online CTE programs rely on a blended approach combining online, instructor-paced, content knowledge and theory instruction with traditional classroom labs or workplace apprenticeship placements (Benson et al., 2004). Blakey (2009) found blended courses to be a favorable option as they combine the best aspects of face-to-face

and online learning; although, the transition to blended courses required extra training for both faculty and students in the tools and methods utilized. Coordinating fieldwork or clinical practicums requires extra time and support from faculty and institutions, as many students reside in another geographic areas (Githens et al. 2012).

Fletcher et al. (2012) surveyed 378 CTE postsecondary traditional and online instructors to determine the most and least frequently used teaching strategies. Traditional direct instruction techniques of questioning, whole group discussion, guided practice, and interactive lecture were the top favorites, along with self-directed learning, which has been shown to be effective with non-traditional, adult learners. Self-directed learning was first proposed by Tough (1971) and included as one of Knowles' andragogical principles. It has been expanded upon and endorsed by others, including Brookfield (2013), and has continued to grow in use in multiple disciplines due to the availability of information and resources via the Internet. Merriam et al. (2007) discussed self-directed learning as occurring when adults "take the primary initiative for planning, carrying out, and evaluation their own learning experiences" (p. 110). This is considered to be an important motivational component of the natural learning process (Caine, Caine, McClintic, & Klimek, 2009).

Implications

Teaching online is not the same as teaching in the classroom; it requires a different, enhanced set of pedagogical and technological skills and competencies. Therefore faculty members may have to adapt instruction to the differentiated needs of online learners, take on additional responsibilities, and master new technologies to

effectively meet the needs of online learning and teaching (Batts, 2008; Bower, 2010; Fletcher et al., 2012; Keengwe & Kidd, 2010).

Batts (2008) noted that administrators could ensure quality online instruction by adopting Chickering and Gamson's Seven Principles (1987), and providing ongoing training, course design assistance, and assessment of online courses. This support would give faculty more time for both professional development and course development, and show commitment to online learning communities by keeping class size low. Keengwe and Kidd (2010) remarked that institutions should provide faculty with professional development and instructional materials and guides that "address all components of the learning and teaching processes including pedagogy, course management, technology and the social dynamics" (p. 537).

Fletcher et al. (2012) advocated that online CTE instructors must get away from traditional teaching methods and adopt teaching strategies that stress 21st Century competencies, such as cooperative and team-based learning, case studies, peer teaching and assessments, problem-based learning, debates, media creation, role playing, and gaming. They recommend that institutions support this effort by helping faculty occupational professionals identify and incorporate those signature pedagogies that will assist students in workplace skills, values, and ethical behaviors.

The small corpus of research on online CTE programs and courses establishes the need for more research into the specific areas of signature pedagogies, incorporation of soft skills development, course design, and assessments for skills training. Using research and best practices from other postsecondary online teaching and learning pedagogies are

helpful, and those strategies should be incorporated until more specific research is available. Benson et al. (2004) documented that exemplary CTE programs blend online instruction with classroom labs or workplace practicums to determine skill development. Research on CTE programs since 2004 has focused on individual disciplines and industries; no other overarching or multi-discipline publications could be found at this time. This project provides links and relationships for best instructional practices among the various research disciplines into a support tool for CTE instructors. The tool produced is a manual to guide instructors for integrating and matching soft skills development with effective technology for online courses.

Chapter 3 Method

Research studies from the mid-1980s though 2014 have identified and prioritized the skills that employers want in their workers; many of these skills have been informally referred to as soft skills. Carnevale et al. (1990) identified seven key skill groups, including listening, oral communication, creative thinking, problem solving, interpersonal skills, negotiation, and teamwork. Communication, teamwork, problem solving, ethical decision making, and interpersonal skills are still among the traits lacking in the majority of postsecondary graduates (Hart Research Associates, 2015; NACE, 2014).

Online education at the postsecondary level remains in demand. In the twelfth annual report, the Babson Survey Research Group reported that almost 6,000,000 students took an online course in 2014. Approximately three-fourths of all U.S. higher education increased enrollment in that same time period, and this is attributed to online learning (Allen & Seaman, 2015). An Association for Career and Technical Education (ACTE, 2010) Career Readiness report stated "[M]any people only associate online learning with providing academic skills, but, as technology has advanced, the connection to technical and employability skill sets is also growing, especially through CTE programs" (p. 4).

The rapid growth of technology and Web 2.0 and Web 3.0 tools, along with the increased need for online courses, has created a dilemma for instructors. How can faculty effectively use the technology for both content knowledge acquisition and employability skills development? How do they incorporate soft skills into the course content and assessment? What are the most effective tools and strategies (pedagogies/andragogies)

for their online courses? These were some of the concerns that led to the development of this project.

Project Options

Several options were considered for presenting selection techniques and technology tools to current and future online instructors. As the topic is about technology, the option to use technology to teach about technology was a primary consideration. Of more importance was the nature of the audience; CTE instructors, as well as most postsecondary faculty, are experts in their fields, but not necessarily in teaching methods or technology tools. Instructors need to be familiar with the tools they are using in order to be effective with this use, and they have to have the means—technology equipment, connectivity, and other resources—not only to use the tools, but also to learn them. Thus, online faculty are simultaneously adult learners and instructors.

Keeping this dual role of prospective users in mind, a variety of project formats were considered: interactive website, video(s), multi-media, PowerPoint or other slide presentation file(s), flow-chart/diagram, checklist, training workshop, and printed manual. The flow-chart/diagram and checklist formats were too restrictive; they might be included in the other formats, but as single items did not allow for sufficient details to be conveyed to the user. Slide presentations, multi-media, and videos were considered as viable options for conveying the necessary content details, but did not provide a hands-on resource for selecting and organizing teaching and skill development tasks. An interactive website could contain a variety of materials for learning about, using, and selecting the

appropriate tools and strategies, but might not be accessible to CTE instructors in rural or isolated locations due to insufficient bandwidth or other technology limitations.

The remaining option was the printed manual. A manual—in either a printed or electronic format—would be easy to distribute to instructors in any geographic location. The manual could contain flow-charts, diagrams, checklists, tables, URLs or links to already existing online resources, videos, and training materials, and lists of other books and resources for additional information and learning. Using Knowles' (1984) andragogical principles to present the "why" for incorporating and facilitating soft skills development, the "how" of instructional design decision making, and the "what" for technology and tools in this low-tech format would allow readers to select their own self-directed learning (Merriam et al., 2007; Tough, 1993) to better prepare themselves for their online teaching experiences.

Developing the Manual

Personal experience in guiding faculty through developing and implementing online courses provided a few key insights for creating a manual. The manual's length should be just long enough to explain the pertinent content and much shorter than a book; time is a scarce commodity for instructors, so they need to get through the content in as short a time as possible. Resources should be provided for continuing study or reference. Content should include sufficient details for understanding the basic components and structure needed in an eLearning course—for both soft and hard skills selection—and a basic framework for collecting the content details to determine the most effective tools and technologies for teaching and assessing those skills. Content should not include how

to use any of the specific tools or too much pedagogy/andragogy. The overarching goal is to help CTE instructors (or any other faculty) improve their teaching by applying best practices and selecting the most effective tool for their distance-delivered or blended-delivered course and therefore improve student success (Stavredes & Herder, 2014).

Audience perspective.

Though this manual may be used as a training tool by any faculty member new to online education, the primary audience is for Career and Technical Education instructors. Many CTE instructors at the postsecondary level are hired for their industry certifications and experience, not for any teaching credentials; many instructors have little or no experience with educational technology. "Developing and delivering effective online courses requires pedagogy and technology expertise possessed by few faculty" (Oblinger & Hawkins, 2006, p. 14); however, more current and new faculty are expected to teach online every year. The *Managing Online Education 2013* survey reported 83% of responding institutions indicated online course content was created by their own faculty and used for more than 75% of the institution's courses (Western Interstate Commission for Higher Education, 2013).

Therefore it was critical to write the manual in plain English, using as little academic, education, or technology jargon as possible, while introducing key terminology that would benefit both the instructors and their students. It was just as important to keep the tone professional yet non-threatening. Presenting the content in a positive, straight-forward manner was a method of lessening the possible intimidation from concepts of technology and inclusion of soft skills. "As instructors start to see that

technology can be a tool to help them instruct, the unfamiliarity and fear fade. Teachers can then impart the people skills, loyalty and work ethic that HR professionals have said is missing…" (McIntosh, 2013, p. 46).

One assumption made about the users of the manual was that they would have some background in training, mentoring, or possibly teaching for their industry in a one-on-one or face-to-face setting. Incumbent in this was the belief that they would therefore have a basic ability to break down, present, and assess their industry's hard skills, competencies, and required knowledge levels. Building upon this mentoring or teaching ability, the manual would allow instructors to select appropriate soft skills and determine the best match for online teaching and assessment tools.

Consolidation of resources.

Development of this project required shifting through and consolidating research, theories, and best practices from general education—pedagogies and andragogies, K-12 education, postsecondary education, eLearning (online learning), technology—computer and Internet resources, psychology, human resource development, and CTE. Contributions to these fields from national and international theorists and researchers were consulted through their writings in books and scholarly journals.

Government, agency, and industry reports were used to gather background information on the importance of incorporating soft skills into educational endeavors. There have been numerous surveys and studies over the past 20 years that have analyzed and predicted issues in workforce training and skills development. America's continued decline in education and skills levels since the 1980s has generated considerable interest

in funding research that might help identify needed changes in policies and programs, including education. “Not only are skills…critical to the prosperity and well-being of individuals, they are also key drivers of economic growth and societal advancement” (Organisation for Economic Co-operation and Development, 2013, p. 3). Further, the Organisation for Economic Co-operation and Development (2013) advances that action is needed, “for in its absence the skills of US adults will fall further behind those of other countries” (p. 12).

For this project, trade, industry, and education associations and publications were consulted for research, programs, resources, and best practices. Of key interested were the Association of Career and Technical Education (ACTE), the International Society for Technology in Education (ISTE) and its Alaska division (ASTE), the National Business Education Association (NBEA), and the Association for Supervision and Curriculum Development (ASCD). Since studies have shown employer demand for soft skills development, it was important to review work done in this area by these organizations.

Feedback process.

Throughout the development of the project, the overall content and project options were discussed with several full-time and adjunct faculty and staff at Kodiak College and in the University of Alaska system. Presentation and layout strategies, along with some of the content issues, were discussed with several other instructional designers.

After the first full draft of the manual was written, it was shared with faculty and staff in the Education and CTE departments at Kodiak College for feedback. Discussions with those individuals and with other peers provided useful suggestions for modifications

to the layout and reorganizing some of the content. One new CTE adjunct expressed interest in using it as a guide for developing his first online course for next fall.

Components of the Manual

Collating foundational information from education, psychology, technology, and workforce development covered a substantial amount of important information and strategies. Selecting just the essential ideas and processes required sectioning the content into three structural areas and then distilling down to a few key ideas and steps. The overall goal of the project was to provide a way to select the most effective online technology tool for teaching and assessing soft skills in conjunction with other content skills. A basic assumption was made that the readers would have some familiarity with training on the content, though not necessarily any formal teaching strategies.

The first area to address was identifying and prioritizing soft skills for incorporation into the curriculum. Many of the workforce certifications are just beginning to address the need for workforce soft skills development; therefore soft skills may or may not already be included in formal curricula. As a process procedure, determining what skills to include should be the first step, and thus this was presented as the first section of the manual.

The second category focused on teaching in general. Quality course design and development requires developing measureable learning objects and then aligning all the assessments, activities, materials, and content information to those objectives (Quality Matters, 2014; Stavredes & Herder, 2014; Wiggins & McTighe, 2005 & 2011). Some instructors concentrate on specific discrete skills and not on the full, integrated picture.

This can lead to a disjointed course, poor content/skill retention, or the inability to transfer skills to other settings or use in problem solving (Bransford et al., 1999; Dirksen, 2012; Stavredes & Herder, 2014). It has been suggested that the best practice in developing soft skills is to ensure that they are interwoven throughout the curricula and the entire program of study (Blaszczynski & Green, 2012; Griffin & Annulis, 2013; USDOL, 1993). Hence, this topic comprised the second section of the manual.

Education, teaching, and learning cover a huge amount of research, theories, best practices, and strategies. It was important to provide a basic framework for determining the course-level objectives (or outcomes) and the unit-level objects that relate directly to soft skill development in order to determine the related assessments. It is the nature of the assessments—how to see the evidence that students are developing the soft skills and applying them in specific situations—that is the primary determinant in selecting the most effective technology for use in an online course. For example, if body language is a component of a collaborative activity or project, then a technology that includes a video component would be required. Keeping the content of this section of the manual down to a minimum was a difficult task. To be mindful of the need for brevity and conciseness without minimizing the importance of these topics, additional resources for future study were provided as an appendix of the manual.

The third section of the manual presented an overview of the types of structures and tools available for use in online courses. Examples were provided for the types of software and platforms available currently. Readers were encouraged to check with an instructional designer about specific tools as these change rapidly with technology

innovation and advances. Internet addresses (URLs) were provided for many of the tools listed for reader exploration.

The final components provided in the manual consisted of a table for use in planning for soft skills objectives and technologies, charts showing competencies for employability skills, a reference chart for developing measurable objectives using Bloom's Affective Domain, and a list of resources in print and online materials for future study.

Summary

The purpose of this project was to create a resource to assist new online postsecondary CTE instructors with identifying and selecting the most appropriate technology and tools for incorporating soft skills development into online courses. Key criteria for the resource included ease of access for instructors in remote locations; accessibility for all types of teachers; conciseness of content for incorporating soft skills development, integrating alignment in course design, and selecting appropriate instructional technology and tools; and adaptability for accommodating technological and educational advances. A variety of high-tech and low-tech options were considered, and the print manual form was selected as the option that most effectively met all the criteria. As a result, this project created a manual that incorporates three informational sections—soft skills selection, instructional strategies with content alignment, and instructional technology selection—along with a chart for mapping course design and technology, and a list of resources for continuing professional development. Subsequently the manual was

vetted with a few current faculty and CTE instructors for format and content; feedback suggestions were integrated into the project.

Chapter 4 Discussion

The original scope of this project was to create a quick reference tool to use in selecting the most appropriate online technology or tool for teaching and assessing content skills. It became apparent to the author that most new instructors, especially in the CTE fields, do not have the requisite background knowledge in teaching to help guide this tool selection process. Thus a short overview of course structure and component alignment was added.

In reviewing the literature for online education and course development, another essential element showed up over and over—the need to incorporate soft skills into coursework for any discipline (Harris & Rogers, 2008; Rosenberg et al., 2012; USDOL, 1999). Restructuring the project to include the emphasis on soft skills development through online technology brought this need to the forefront of considerations to review when selecting the online teaching tools. Since the same process is used for tool selection for both hard and soft skills, the manual may be used for any online course development and technology selection. These concepts were included in the first draft of the manual before feedback was solicited.

Current Version

The project has undergone a few minor revisions since its inception. Conversations with adjunct CTE instructors helped guide changes for content to include or remove from the manual. They pointed out several words, such as “pedagogy,” where a definition should be provided, and they asked questions about the content that led to additional explanations or examples being included. One new CTE adjunct instructor

thought the content was a bit overwhelming in scope (too many new concepts all at one time), while two other current CTE adjuncts loved the condensed format and wanted to know why this was not available when they started teaching.

Organizational structure of the manual was modified as the result of feedback from faculty and other readers to improve flow and consistency in the presentation of content. One full-time faculty member focused on editing issues, proofreading, and formatting, though she also suggested there should be more details and explanation in section two on how to write measurable objectives and how to ensure alignment of the objectives with the other elements in a course. Portions of the suggestions were implemented. All reviewers thought it was a useful tool and that it might be used as the basis for an initial instructional design workshop with faculty new to online teaching. The current version is the result of all these changes. Since technology and teaching are continually changing, the manual should be updated at least every two years to keep it current with technology tools, instructional design, and education practices.

Benefits

This project has two main categories of benefit for potential users: its form and its content. The print manual form accommodates a variety of distribution methods, and it can be easily revised or expanded. The condensed content affords an overview of several critical aspects of teaching with technology, and the list of resources provides a guide for continued professional development and personal learning.

There are several advantages for selecting a print manual with the current content information. A printed manual (or electronic file format of the manual) is easily

distributed to potential instructors, especially those in remote or other isolated areas that have limited technology resources. The printed version can be physically mailed to remote sites or handed out during workshops or professional development sessions. The electronic file can be emailed to individuals or groups, posted on websites, or copied onto electronic storage devices, such as CDs or USB memory sticks, and then distributed. Any or all of these delivery methods should be used to get the manual into the hands of new online CTE instructors.

A major consideration in the development of the print manual was the familiarity of using printed content for disseminating information. CTE instructors are accustomed to reading about their industry and related skill requirements; hence, providing a readable format that emphasized blending soft skills development into the existing curriculum should not be seen as a foreign concept. Therefore, the familiar form and abbreviated size should encourage instructors to read it and use the information on employability skills and technology in their teaching practices.

Another value of the printed format is its flexibility. A print manual is easily updated when tools become obsolete, new tools are developed, or when resource links or references must be changed. The content can be expanded to include additional related topics; the resource list can be expanded to include other assets or to present possible course or training offerings. The word processed file can be incorporated into other print or electronic content items, e.g. inclusion as a chapter or appendix in an edited book. This flexibility makes the manual useful for staying current with workplace skills and workforce development important in CTE.

The condensed content affords an overview of several critical aspects of teaching with technology. The distillation of information into just a brief look at each of the content areas provides a synopsis of key components in teaching online, incorporating soft skills into the curriculum, and selecting the most effective tool(s) to use. The manual presents information for the instructor to use in developing the online course that he/she may not have considered elsewise or even been aware of previously; its conciseness helps prevent overwhelming instructors with all the background, theories, and applications involved with studies of any of the individual topics. Brevity of content makes the manual more user-friendly and therefore more likely to be used by CTE faculty for online course design and development.

The content's list of resources offers the readers a starting point for planning their own self-directed learning into any of the content areas. Self-directed learning is a driving motivational element in adult education and a key factor in developing the habit of lifelong learning (American Institute for Research TEAL, 2011; Brookfield, 2013). Correspondingly, the list can be used as a starting point for both individual and group professional development. Lifelong (or continuous) learning is also a highly desired workforce trait (Partnership for 21st Century Skills, n.d.; USDOL, 1993), which can be effectively modeled by CTE instructors.

The manual could serve as a framework or outline for converting this information into an interactive website or full course about the content materials and strategies. Since it is currently condensed, each section of the manual might be expanded and developed into a workshop to allow for more interaction, discussions, and exploration of the

materials presented. Therefore the manual was the best form for encompassing the scope of the project.

Limitations

The project has five possible drawbacks: distribution; intended audience; brevity of content; restricted access or availability of tools and instructional design services; and lifespan limits of the technologies presented. These drawbacks are the flip sides of the benefits; many of these weaknesses can be overcome with expansion of the scope or design.

The low-tech print form of the manual makes it easy to distribute, but implies that there is a distribution network for it already. This network for potentials users probably does not exist in a well-developed format, but is in more of a "who knows whom" format—a "word of mouth" dissemination. Faculty and CTE instructors who receive this manual could improve the outreach of the tool by sending it to other colleagues. To maximize this tool's usefulness for CTE instructors, it should be published or distributed in a more formal process so that those who might benefit from it would have it available. CTE schools and departments might include this in faculty orientations, professional development, or post it on their websites for easier access by a wider prospect of users.

The manual was developed with the assumption that the primary audience would be instructors who already had a rudimentary understanding of teaching and learning; therefore they would know basics about pedagogy, andragogy, and assessment techniques. While this may be true for some of the potential readers, the need for this type of information for those individuals who are just beginning to teach may mean that

they will seek this out. Thus the actual audience may be different than originally intended and additional content or resources might be required for the expanded audience to fully utilize the content. Likewise, experienced online instructors might also find the manual useful as a reference for the technology tools or as an organizational guide for aligning current content with technology or incorporating soft skills development into the curricula. Expanding the intended audience might simply expand the need for improved distribution or create a need for similar manuals to be developed aimed at different faculty or departmental groups. Modifying the intended audience can be addressed in future iterations of the project.

Brevity of the content is a dichotomy of benefit and weakness. Keeping content concise allowed for more easy and flexibility of use, though it might also cause some confusion or frustration for users who experience the ideas in the content for the first time. Though additional resources are provided for follow up or self-directed learning, some readers may want to undertake more traditional professional development or learning options to better understand and utilize technology and soft skills development in online, blended, or face-to-face courses. CTE departments and schools could develop specialized training on these topics or provide a list of courses or workshops that are offered locally or online. CTE industry partners might assist by offering training resources or references; they could be enlisted to share how they assess and reward soft skills development with their employees.

CTE instructors with only industry training may not have knowledge of educational resources, which is one reason why the recommendation to contact and seek

the services of instructional designers was specified in the manual. Yet there was no provision for how to find an instructional designer; it was assumed that the CTE or academic department for whom the instructor will be teaching would provide that resource, which might not always be available. It would be advantageous for schools or departments to create a list of local or online resources for instructional design and technology support, and distribute the list along with this project manual. Departments could purchase some of the resources listed in the manual for creating or adding to a lending library for faculty to encourage and reinforce faculty professional development in soft skills training and technology use.

Another potential shortcoming of the manual is its assumption that readers will have access to the resources mentioned. Limited availability, restricted access, or lack of technologies and services could hamper the effectiveness of the manual as a resource for CTE instructors. Technologies, tools, instructional design and technology support personnel, and soft skills resources might be non-existent or in short supply in rural or remote locations. Specific tools and technologies might not be available at the reader's location due to budget or procurement issues, limited Internet services, insufficient capabilities of existing computers or other equipment, or simply non-existent equipment or devices. Readers of the manual might have to investigate their available options before selecting the most effective tool for teaching online and for how to incorporate soft skills into their courses. It would be extremely helpful to have such a list available for all readers, but this is not within the scope of the project. A future project could research

University of Alaska resources for all campuses and provide the reference list to readers along with the manual or include it as another appendix in the manual.

The third section of the manual is on "technologies, tools, and techniques." This section is a quick overview of these topics and is by no means exhaustive. It was designed to give a big-picture view in order to assist with selecting the most effective means for teaching and assessing skills (especially soft skills) in the online environment. With the rapid changes in technology and tool availability, some of the tools listed could conceivably be outdated before the manual is distributed. The lifespan of electronic equipment, technologies, software, and online services can be volatile and short, pointing to the need for regular reviews and updates to the manual. For the manual to retain its usefulness, it should be updated on a consistent cycle at least every two years.

Recommendation for Use

Users of this manual should be aware of the assumptions made about the intended audience, and that the manual provides information for selection of tools and resources—it does not explain how to teach or assess specific skills. After technology and tool selection has been made, the readers should discuss these choices with an instructional designer, a faculty mentor, their department chair, or an educational specialist to help with developing specific activities, assessments, and other teaching and learning strategies for their online, blended, or face-to-face courses.

The manual was developed as a guide, but it could be used as a resource or reference for adding other activities or components to a course. Many technology tools can be used in a variety of ways to improve student engagement and to document

knowledge acquisition and skills development (or various stages of development). The tools listed as examples of the specific types of technology were selected because they were well known or had established use in those areas; other more suitable tools may exist or may have been developed by the time a user reads the manual. Caution should be exercised in limiting options to only those presented in the manual. While many of these tools may be a perfect fit for a specific teaching or assessment of an identified soft skill, there may be other tools just as useful and more cost effective. Readers should check with their own institution for availability and use of specific tools before implementing the tools into the online course.

Instructors using the Internet and technology in a course structure should be aware of or familiar with their institution's policies and regulations regarding technology use, copyright use, FERPA, online security, accessibility, and personal privacy. They should investigate whether policies, procedures, or special release forms are required when recording or transmitting student work and personal images. Soft skills development and assessment relies on interacting and observing people's behaviors and attitudes in specific situations and circumstances. To do this with eLearning may require additional processes or safeguards. Faculty should consult with their CTE, professional development, or legal departments while developing their courses to ensure they are in compliance with all regulations. The manual does not address these issues specifically; it assumes that schools and departments would provide instructors with this information in other training or support venues.

Postsecondary schools, community colleges, and universities should take advantage of this manual as a both a resource for faculty and a guide for support and curricula discussions for inclusion of employability skills. The demand for soft skills development in college graduates will be a priority for the foreseeable future (Lorenz, 2009; NACE, 2014). To meet this need, Rosenberg et al. (2012) recommend that "regardless of the academic discipline faculty should teach the soft skills that industry expects and that students need in order that graduates gain entry-level employment (p. 16)." Additional recommendations include more actively partnering with advisory councils, industry and professional associations, and local employment agencies to improve communication and determine soft skills competency levels desired for various levels of employment positions.

The demand for online courses and programs continues to grow at rates greater than on-campus courses (Allen & Seaman, 2015; Lokken & Mullins, 2014). Working adults need the flexibility of online courses to fit them into their busy lifestyles (Rhoda, 2005) and to gain skills required in current or future employment. Higher education institutions need to prepare faculty to efficiently utilize online technologies and quality course design to effectively deliver online courses and programs (Caplan & Graham, 2008; Quality Matters, 2014). This project manual might serve as a checklist or outline for accomplishing both outcomes for any postsecondary CTE school or department.

Summary

This project was developed to create a resource that facilitates the decision making process for effectively matching online technologies with the educational needs

for incorporating soft skill development in online postsecondary CTE courses. A print manual form was selected as the optimal medium for meeting the scope and criteria of the project. The manual has several distinct advantages: compressed content, resources for continued learning, ease for revision or expansion, and flexible distribution options. These benefits make it ideal for use with instructors in remote or rural locations as either a stand-alone tool or as the framework for professional growth. In contrast, these same advantages have opposing restraints: content brevity; confines of existing (or non-existent) tools, services, and resources; technology lifespan; controlled audience; and distribution. Most of these limitations can be addressed by expanding the scope or design in future iterations of the project.

Employer demands for workers with soft skills and student demands for eLearning courses and programs have been identified issues for over 20 years and do not appear to be going away any time soon. Employers believe that postsecondary institutions are not meeting these needs (Hart Research Associates, 2015) and the demand for online courses continues to rise (Allan & Seaman, 2015). Incorporating soft skills development into all CTE courses and delivering those courses effectively by matching learning and assessment strategies to appropriate technology tools is one way to help resolve these demands. The manual created in this project can assist in facilitating this solution.

Chapter 5 Conclusion

Effective strategies for online teaching in postsecondary CTE programs rely on appropriately aligning employability skills and signature pedagogies for a specific occupation with a delivery mode and technologies that best support students in mastering professional and soft skills. Faculty need training and support to determine and implement successful online courses and programs. Moreover, faculty need to incorporate effective teaching and assessment strategies for soft skills development into CTE programs and courses. This project was designed to help support faculty in meeting these needs.

The manual was well received by several local faculty and CTE instructors. Their evaluation and feedback led to several format and content modifications now included in the current version of the manual. The scale of this project was small and localized to a small, rural Alaskan community campus; its review was qualitative and informal. The next step would be to expand the distribution range to a larger geographic area that includes both urban and rural postsecondary institutions, such as the full University of Alaska Anchorage system. A more formal evaluation survey should be created to collect qualitative and quantitative feedback on the usefulness and effectiveness of the manual. Results from the evaluation survey would guide future iterations of the manual and help determine other possible formats for delivering the content.

Future steps might include (a) expanding the scope to all of Alaska and subsequently out to larger geographic areas, (b) more extensive vetting and refinement of the content, (c) formal publication of the manual, and (d) creating an interactive website

with both print resources and multimedia tutorials. To date there has been very little research directed specifically at or for CTE online programs or courses. Future uses and evaluations of this project might spur additional projects or avenues of investigation for filling this gap in the literature and industry knowledge about improving and supporting CTE.

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Appendix – Project – Technology Compatibility Guide for Soft Skills Integration

There have been hundreds of books and reports written about online teaching and learning since the opening of the World Wide Web in the 1990s. Thousands of resources exist about teaching in general, and volumes of work have been produced about technology and its related tools. Fewer publications exist specifically focusing on "soft skills" unless you research individual traits such as adaptability, decision-making, or work ethic in the behavioral sciences. The sheer volumes of unique topic information in all these areas is sufficient for numerous advanced degrees; but who has time for all of that? More importantly, how could anyone ever be able to assimilate it all and apply it to their real job of teaching workplace or career competencies?

The answer to those questions is: we can't! Few people, if any, would have the time, energy, determination, or mental ability to become experts in psychology, education, and technology while functioning effectively in their own profession.

Part 1: Identifying Key Workplace Soft Skills

What if critical elements of psychology (soft skills development), education (effective teaching strategies), and technology (online tools and techniques) could all be combined into one instrument? Would such a device help Career and Technical Education (CTE) instructors and industry trainers be more confident and effective in their roles in postsecondary education? The development of this manual was a first step toward answering those questions.

Purpose

The purpose of this guide is to provide a resource for appropriately matching technology tools with the delivery and assessment needs for teaching and learning soft skills. Employers have consistently identified soft skills as high priority for hiring new employees and for the success and retention of current employees (Carnevale, Gainer, & Meltzer, 1990; Hart Research Associates, 2015; U.S, Department of Labor, 1991). With current educational demand for online courses, programs, and workforce training, selecting the most appropriate tool for skills development should be a priority for the instructors and institutions. This guide explores the criteria for various classifications of eLearning tools and lists how these can be utilized with soft skills training.

The guide is not a "how to teach" manual; it does not cover all the possible aspects of instructional best practices, pedagogy (the art or science of teaching children) or andragogy (the art or science of teaching adults). It will provide a few examples for illustrating techniques, though that is not its main purpose. Instead, its focus is to assist postsecondary CTE instructors with selecting the most effective online learning technologies and tools to use in teaching and assessing soft skills components of their courses. There are a number of resources to use when planning lesson materials or

developing eLearning content (see the Charts and Resources List in the appendices); however, the most efficient way to ensure your course is structured for both the hard skills (technical skills, competencies, and content required for the topic or skill) and soft skills (the people or emotional skills) is to consult with instructional designers, industry organizations, and local industry advisory boards.

What Are Soft-Skills?

Lorenz (2009) describes soft skills as a "cluster of personal qualities, habits, attitudes and social graces that make someone a good employee and compatible to work with" (para. 1). A Google search for this term will bring up websites that describe it in terms such as work ethics, values, attitudes, emotional intelligence quotient (EQ), personality traits, interpersonal relations, and employability skills. These are our "human" skills, our attitudes and beliefs, our affective characteristics. Synonyms for soft skills include terms like "employability skills" or "interpersonal skills," and they can be included in the popular category of "21st Century skills." They generally require more practice and support and are more difficult to assess than the hard skills associated with traditional education and skill development (Blaszczynski & Green, 2012).

Soft skills can be grouped or categorized in different ways; the groupings depend on the study or organization identifying them. How soft skills are categorized may not be important in specific industries; however, many industries or careers place a higher priority on specific traits or values. Before incorporating soft skills development into any curricula, instructors should check with their professional associations to determine the top employability skills needed in today's and tomorrow's employees.

In 1956, Dr. Benjamin Bloom and his associates identified three domains, or categories, of learning: cognitive (knowledge), psychomotor (physical skills), and affective (attitudes and emotions). Most of our formal education has focused on the cognitive domain. For decades, educators have used Bloom's Taxonomy to structure measurable learning objectives and learning experiences for concept knowledge. Many people don't realize that the commonly referred to "Bloom's Taxonomy" is actually the taxonomy for just the cognitive domain, and that there are taxonomies for the other two domains as well. Bloom and his associates developed a taxonomy for the affective domain that can be used in a similar manner to structure measurable learning objectives for soft skills. Don Clark has compiled a website of resources about these taxonomies (http://www.nwlink.com/~donclark/hrd/bloom.html). His table of the five levels for the affective domain taxonomy is shown in the next section of this guide.

Measurable learning objectives are statements that precisely and clearly describe (1) what will be done, (2) how it will be done, and (3) at what level of proficiency it will be done; though sometimes the second and third components are implied and not written into the objective.

Identifying Priority Soft Skills

Dozens of soft skills have been identified and categorized by researchers and surveys over the past twenty-five years. How do we select the ones to include in our curricula? Should these skills be prioritized and if so, by what methods?

A little research may be needed to identify and prioritize the key soft skills for each industry, discipline, or occupation. Make a list of the soft skills required by most or all jobs within a specific industry, profession, or career cluster. The list should have the top ten or fifteen most critical or in-demand skills. Then use the steps below to help complete and prioritize or rank the skills. Select only a few skills (at least one but no more than five) to fully integrate into your course.

- First, check with your institution and colleagues for course or program requirements to see if any soft skills objectives or outcomes are already integrated in the curricula.
- Second, check for any industry requirements in existing credentials, certifications, or standards; some industry associations or professional organizations may have recommendations or specific criteria related to soft skills.
- Third, seek advice from local advisory boards and industry businesses and employers; they know what skills are valued or lacking in new hires.
- Fourth, use Internet resources such as state or federal employment websites or national occupational websites for position descriptions and job requirements. The Occupational Information Network (O*NET) database website contains most occupations within each career cluster, with each one listing the required or recommended job performance tasks, activities, knowledge, skills, and abilities (http://www.onetonline.org/find/career?c=0).
- Finally, if you still don't have enough skills on your list, check one or more of the publicly available survey reports. The SCANS Competencies and the Alaskan Employers Expectations charts are listed as appendices to use as a starting point. Select the most critical skills from these to begin.

Soft skills have in demand by employers since 1990, and survey reports have included a list of the results for the most often identified valuable or desired skills. These reports are also a good way to select the skills to embed into courses. These lists are already built, but not prioritized for any one industry or occupation. Select the most critical skills from these to begin. It might be advantageous to seek the advice of an assessment coordinator or instructional designer for ranking and incorporating these skills into the curricula for a specific course or program.

Part 2: Current Strategies for Teaching and Assessing Workplace Soft Skills

This guide was designed to help postsecondary instructors, especially those in the CTE fields, to select the most appropriate and effective online tools, technologies, and strategies for teaching and assessing soft skills development and learning objectives. Most of these suggestions can also be applied for matching to the industry hard skills or technical objectives. The guide assumes that these instructors are already familiar with teaching their industry's content and technical skills in a face-to-face classroom or workplace setting. If this scenario does not describe you, please continue reading while keeping this context in mind.

If you are an instructor who is new to teaching—an industry professional who has been recruited to teach at the postsecondary level—you would benefit greatly by seeking the assistance of instructional designers, certified trainers in your industry, or mentoring from seasoned CTE faculty. The instructional designers and mentoring options should be available through the department, college, or institution in which you (or any new instructor) will be working.

To learn more about teaching methods and strategies (pedagogies and andragogies), you might find value in taking an education methods course or working through one of the recommended books. A great place to start is with the books from Grant Wiggins and Jay McTighe. They have written several excellent books on backward design (alignment of course materials, assessments, and support activities to meet the course learning objectives). The *Understanding by Design* books are listed as appendices in the Charts and Resources List, along with several others that provide a wealth of information on teaching and online learning.

Before deciding upon the specific teaching or assessment strategies, you need to determine measurable learning objectives (or outcomes). Measurable learning objectives are statements that precisely and clearly describe (1) what will be done, (2) how it will be done, and (3) at what level of proficiency it will be done; though sometimes the second and third components are implied and not written into the objective itself. To ensure that students meet these objectives, all of the evidence, assessments, learning activities, course materials, and course tools must have a clear connection and relationship. This is the process of alignment. Just as there are concrete, measurable skills for industry certification or mastery, integration of soft skills requires the same structures. This alignment process applies to overall program-level, course-level, and unit-level (module-level or lesson-level) skills and relies on the backwards design process:

- Determine the skills to be learned and develop learning objectives/outcomes using measurable action verbs. All objectives/outcomes should support and align with the level above them (e.g. unit-level objectives should support the course-level objectives; course-level objectives should support the program-level objectives). Consult one of the many taxonomy lists for recommendations of measurable action verbs. Bloom's Taxonomy for the Affective Domain is included in the appendix for help with selecting appropriate verbs for soft skills objectives. For a

better understanding of writing measurable objectives, run a web search for "creating measurable objectives" or see the Association of College and Research Libraries' online tutorial (http://www.ala.org/acrl/aboutacrl/directoryofleadership/sections/is/iswebsite/projpubs/smartobjectives).

- Decide what evidence needs to be shown for meeting each of the measurable objectives. What actions, behaviors, or materials do you need to see that would show the student has met the objective at the appropriate level of proficiency (usually 75% or higher is targeted)? The decision for the required evidence will help determine what the assessments will be, and the proficiency level will help determine the grading criteria and scale. This is the step where the assessments are developed; assessments are not just tests, but include any graded or evaluated work. Rubrics are very effective tools for determining proficiency.
- Instructional materials are the next decision that should be made. What content items are needed? What textbook, supplemental materials/readings, supplies, or media need to be included so that the students will have the information or guidance for support of completing the assessments?
- The next step is to decide what learning activities are required. Do students need to practice the skill(s) in one or multiple settings, exercises, or conditions? Are there activities that will help students transfer the skill to the workplace? Many soft skills involve communication or collaboration, so have these been built into activities?
- The last step is to select the appropriate technologies and tools to use based on the activities, instructional materials, and assessments. Will any of the activities or assessments require two-way communication? If so, should that communication be synchronous or asynchronous or both? The next section will provide descriptions of all the general types of tools and technologies that might be needed.

Beginning with the outcomes (or objectives) in mind can be overwhelming when trying to incorporate new content or skills. This is especially true for inclusion of soft skills. The U.S. Department of Education Office of Career, Technical, and Adult Education's Perkins Collaborative Resource Network (PCRN) has created a website that seeks to unify all the input and survey results from various corporate, non-profit, education, and government organizations into an Employability Skills Framework. Their website (http://cte.ed.gov/employabilityskills/) contains descriptions, charts, comparisons of required skills, crosswalks between the academic and technical skills in the Common Core Standards and other state standards, and suggestions for objectives. This framework breaks employability skills into three main categories with nine sub-categories (see Figure 1).

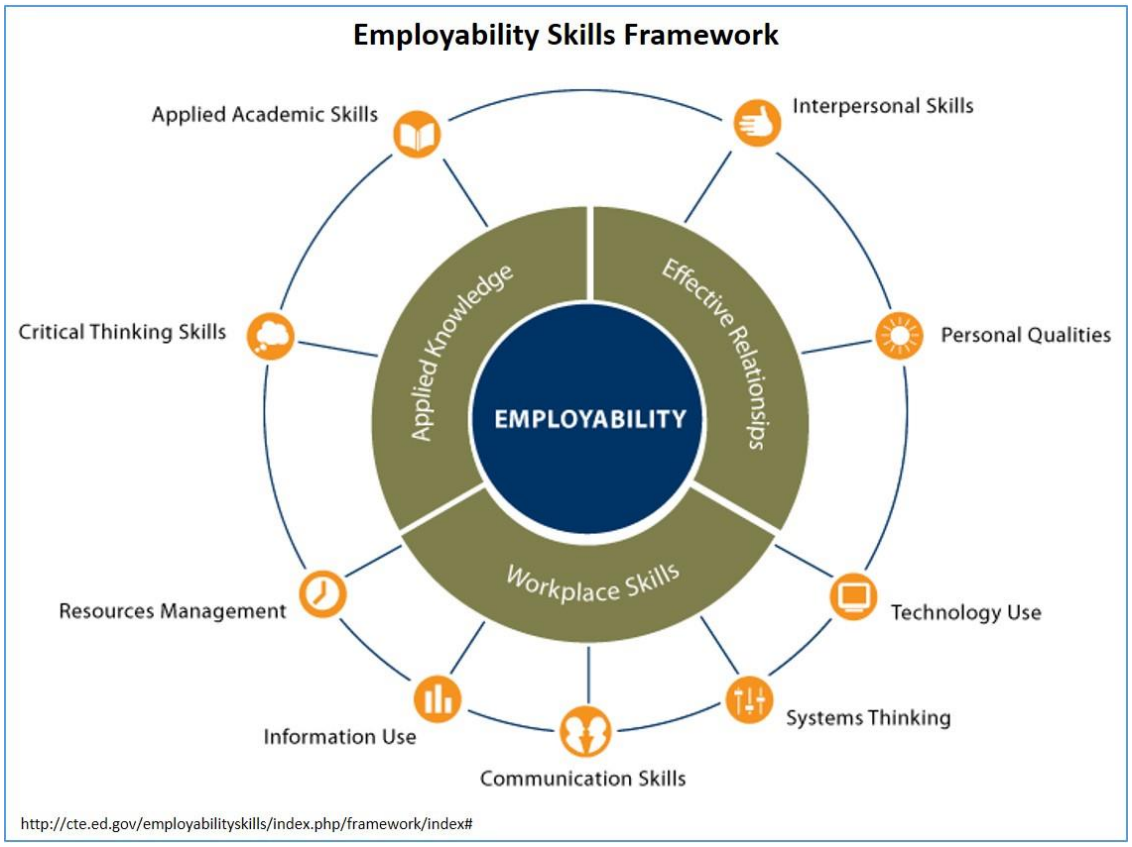

Figure 1. The diagram shows the Employability Skills Framework's three categories and nine sub-categories and how they are interrelated in a series of rings within a circle. Reprinted from USDOE PCRN (n.d.) public domain document.

On the website, the framework is interactive. Clicking on any of the nine sub-category skills indicators will bring up specific related skills. These skills are not always written as measurable objectives, but they do provide more details for an instructor to write measurable objectives (see Figure 2). This website also includes a section for educators with additional tips and resources.

Figure 2. The diagram shows the Employability Skills Framework's Interpersonal Skills sub-category and the skills it includes. Reprinted from USDOE PCRN (n.d.) public domain document.

Since soft skills are "people skills," they are part of a person's behaviors, beliefs, and habits. Such skills "often require more time to develop and may be more challenging to assess accurately [than technical skills]" (Blaszczynski & Green, 2012, p. 1). The neurophysiological basis for behaviors and habit formation (or suppression) may require specialized treatments or iterative cycles of specific practice and feedback which take time and require a variety of situational applications (Graybiel & Smith, 2014; Blaszczynski & Green, 2012; Wood & Neal, 2007). Due to the nature of developing soft skills, educational best practices recommend interweaving specific skills through the entire program, rather than just integrating within one course. However, a single course can effectively include components of any individual skill and should also incorporate reflection activities to help students recognize and internalize new behaviors or values.

Blaszczynski and Green (2012) reviewed several models for developing soft skills, all of which included repeated use of guided practice, feedback, practice, and evaluation with reinforcement of the developed skill. Recommended strategies for assessment were outlined. In a follow-up article, the authors described several activities for developing soft skills, such as role play, reflection journals, and listening activities (Green & Blaszczynski, 2012). Murphy, Putter, and Johnson (2014) described best practices in interpersonal skills development that include understanding barriers in communication and relationships, learning to give and receive feedback, learning to work

collaboratively with others of differing beliefs, using behavior modeling, and developing self-management and continuous learning values.

Common assessment strategies include: pretest/posttest (for showing levels of improvement or change), written essays or reports, semantic analysis, portfolios and e-portfolios, role plays, simulations, logs/blogs, journals, presentations, performances, projects, service learning, and reflections. Rubrics and checklists are the common methods for evaluating the quality and proficiency of many of these assessment items. Of course, this list is not exhaustive and many other artifacts of learning can be evaluated. Most of these assessments can be created to be used by single individuals or by collaborative groups or teams; however, with most employer surveys listing communication and teamwork skills as the most sought after skills, it would be highly beneficial to incorporate as many collaborative assessments as possible.

There are many aspects of creating and assessing group or collaborative assignments. Again, it would be appropriate to discuss this with an instructional designer or experience teacher in your discipline. There are several resources listed in the appendices for this as well.

Part 3: Online Teaching Technologies, Tools, and Techniques

For the purposes of this guide a few definitions are required. "Technologies" refers to the type or category of eLearning focusing on a common criteria. "Tools" refers to the specific application, program, software, cloud-based or Internet-based utility, or free or proprietary service; a tool can belong to one or more technologies depending on its function or programming. For more examples of tools, check out the latest survey results "2014 Top 100 Tools for Learning" (http://c4lpt.co.uk/top100tools/) or search through the most current or popular online tools and applications at Go2Web2.0 (http://www.go2web20.net/). "Tactics" are the ways tools and technologies are applied to a given use, structure, or pedagogy/andragogy.

Educational best practices require the selection of strategies based on the demands of the discipline, the content, and the skills being taught and assessed. Technologies and tools are secondary to the content; a tool or technology should not be selected because it is the "latest and greatest" or because it is "really cool." Rather, the priority should always be to determine the content and skills strategies first. Once these are planned, the specific tool(s) can be determined by what is currently available at the school or what is known or quickly learned by the instructor. Finally, the tactics are designed to encompass all of the teaching and eLearning components.

As in all great teaching, a variety of content, activities, assignments, and assessments are needed to meet the needs of all learners. So too a variety of technologies and tools may be necessary to support the teaching and learning components of a course. This section will point out the general categories of technologies and provide a few (not an all-inclusive list) of the common tools currently available. Tools change continuously,

so it is advantageous to consult with an instructional designer or technology specialist to ensure availability and suitability of specific tools listed here.

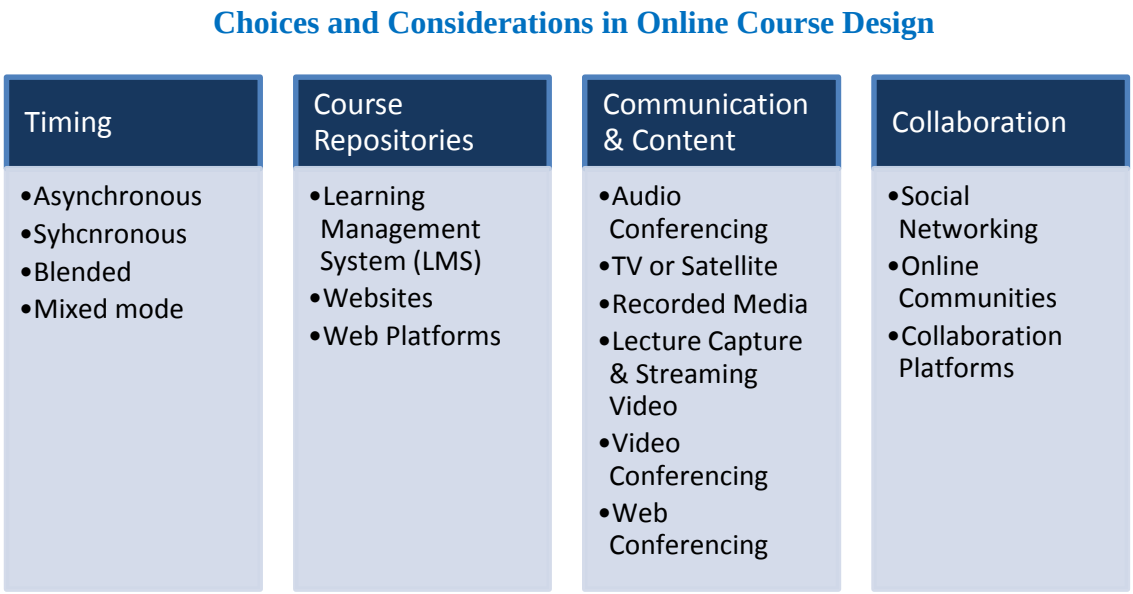

Figure 3. This chart shows the specific options to be considered within each of the four categories of online teaching.

Timing.

Online or eLearning can take place in a variety of timing situations; courses do not have to be all of one type. In today's educational climate, there is a huge demand for asynchronous learning opportunities. Demand is important, though it should not be the overall determining factor; the educational strategies should provide the rationale for which timing methods to use and when to use them in the design of the course or program. It may be beneficial to combine or use different timing structures at specific points within the duration of a course.

Asynchronous:

- Learners can access materials, assessments, and resources at any time—no set meetings.
- Some of the content or assignments may have deadlines—can be self-paced or instructor-paced.
- Requires students to work through all the content on their own; however, it may require small group or paired activities.
  Note: Originally this meant little interaction with other students (lower-level

competency or mastery based courses) and activities were mostly classified as "student to content" or "student to instructor" interaction. Best practices are changing this, but the stereotype remains.

- Commonly relies on heavy reading and writing through discussion forums (original posts and replies to others) and additional assignments; newer technologies are allowing for more creativity and media in the discussions and assignments, though this often involves learning the specific technology just for the course.
- Faculty communicate via feedback on work turned in, usually by comments in written, audio, or video formats. Frequency of feedback interaction depends on both the nature of the course and the strategies of the instructor.
- Lower-level courses using this method have generally focused on acquiring knowledge—lower levels of Bloom's Taxonomy (cognitive skills); but this does not have to be (or should not be) the case. Higher-levels of the taxonomy can be worked into complex or multi-dimensional projects.
- Common misperceptions or myths: asynchronous courses are easier than others, the work can be completed in a few intensive days determined by the student, and require very little if any interaction with others or with the instructor.

Synchronous:

- There are set meeting times using eLearning technologies: web conferencing, video conferencing, or audio conferencing.
- Usually not self-paced; all content and assessment are on a timeline set by the instructor; there are specific deadlines for most activities and assessments.
- Course meetings focus on interaction among the students, sometimes with the instructor(s) as well. Courses typically incorporate small group discussions, Socratic Method teaching style, teamwork, collaboration, and other engagement strategies.
- Faculty communicate during class meeting sessions as well as through individualized feedback on coursework assignments.
- Courses using this method generally focus on higher levels of Bloom's Taxonomy (cognitive skills).

Blended (or hybrid):

- Parts of the course are synchronous and parts are asynchronous.
- Commonly used for combining face-to-face and online/eLearning methodologies; e.g. if a course "meets" for two sessions per week, one session would be synchronous (face-to-face) and the other would be asynchronous (online). This is

gaining in popularity for fully-online courses: one session is held synchronously online and the other is asynchronous, where students work independently or with others on their own timeframe.

- Requires careful consideration of all aspects of both the synchronous and asynchronous timing structures when designing activities, assessments, and scheduling.

Mixed Mode (or hybrid):

- Course uses set meeting times (synchronous), but content is delivered simultaneously in two or more ways.
- Common format is a face-to-face classroom section and an online class section that uses video conferencing or web conferencing to connect to the instructor and the face-to-face students.
- Can accommodate smaller numbers of students in each arena, but with the total number of students comprising a full course; e.g. if the face-to-face class only has five students, there may be ten other students in various locations attending through the eLearning connections, and therefore a full class of fifteen students. This can help prevent course cancellation due to low enrollment.
- Can be challenging for the instructor to monitor and address the needs of all the students; lessons and activities must be designed considering all of limitations of the locations of the students.

Course repository.

Where the course "lives" online is determined by the technology decisions of the institution and the teaching philosophies of the instructors. Some institutional policies mandate use of institutionally-supported platforms. If allowed to use publicly available Internet locations, cautionary or anonymity options must be available for protecting students under the Family Education Rights and Privacy Act (FERPA). Accessibility requirements also need to be considered when selecting the home for the course. Most instructional designers and technology specialists are well versed in these issues and can be a valuable asset and should be consulted whenever there is a question or concern.

LMS = Learning Management System

- Description:
  - A standardized platform for housing all aspects of courses, including delivery of content materials, assessments, assignments, interactions, communication, learning analytics, and specialized tools; most include a grade book feature.

- Many courses do not use LMS programs and just exist on websites: Google Apps (Google Sites or Google Drive), faculty domain websites (where individual instructors have their own URL and web pages), or public BLOGs and WIKIs. This can have potential issues for FERPA and other security issues, so caution must be used when planning what is published on these sites.

- Characteristics:
  - An LMS can be public or it can be locked in a password-protected environment. Most postsecondary institutions have a password-protected environment to preserve the rights of students under FERPA.
  - Most LMS platforms have a variety of tools for content presentation, assignments (some have interactive rubrics for scoring work), blogs, wikis, journals, calendars, social media/networking, messaging, testing, and gradebooks.
  - These have technology equipment requirements (Internet connection speed, computer processor types, software, and abilities, special apps for mobile devices) and frequently require training to use. Most postsecondary institutions make a technology decision on what platform the entire institution will use, and then the instructors must take the time to learn it or seek design and technology assistance from an instructional designer.

- Examples:
  - Blackboard Learn (http://www.blackboard.com/Platforms/Learn/Overview.aspx)
  - Angel (http://www.angellearning.com/products/lms/whats_new_74.html)
  - D2L/Brightspace (http://www.brightspace.com/solutions/higher-education/)
  - Sakai (https://sakaiproject.org/)
  - Moodle (https://moodle.org/)
  - Canvas (http://www.instructure.com/)

Communication and Content.

There are several aspects to online communication and content delivery. The major factor is how the communication flows: one-way, two-way, one-to-one, one-to-many, many-to-many, or many-to-one. A primary consideration in selecting the communication and delivery technology is the assessment criteria: to assess the skills, is it necessary to see and hear the students synchronously, or does some other combination suffice?

Audio Conferencing

- Description:
  - Two-way, synchronous communication; audio (sound) only.
  - Uses phone lines or VoIP (Voice over Internet Protocol) connections.
- Characteristics:
  - Relies on phone company or communication company services.
  - Equipment is limited to phones or phone services on electronic devices.
  - Can be difficult to explain tasks or skills due to use of just speech (no visual materials can be presented, however, these may be posted or sent out ahead of time).
  - Older, established technology, and thus is very stable in most areas; has been in use for a relatively long time.
  - Class meetings require conference calling, which might be an added cost. If students have to call in, a toll-free number should be provided to prevent excessive charges on phone plans.
  - May be required to provide TTY phone (or similar) service for students with disabilities.
- Examples of VoIP services:
  - MagicJack (http://www.magicjack.com/index.html)
  - Vonage (https://phone.vonage.com/)
  - FreeConferenceCall (https://www.freeconferencecall.com/)
- Examples of Internet calling applications for computers or mobile devices:
  - magicAPP, LINE, Viper (http://www.viber.com/en/)
  - Upptalk (http://www.upptalk.com/)

TV or Satellite delivered courses

- Description:
  - Generally a one-way, synchronous communication. If participants need to ask questions or participate in some form, an additional technology (such as audio conferencing) must be set up.
  - Primary use is for lecture or demonstration of process or content information—a "push" technology (pushing out information without receiving feedback).
- Characteristics:
  - Older, established technology; may require use of a third party, such as a cable network provider or satellite dish provider.

- Broadcasts are set up by institution or company through a broadcasting service; students must have their own access to the service (such as cable TV).
- May be broadcast live or from a recording.
- Recorded broadcasts may be considered asynchronous delivery when students only watch and then complete a related activity afterwards; live broadcasts are considered synchronous, as students watch/participate in real time, and use recordings simply as study tools at a future time.
- Live broadcasts may require live captioning services or sign language service if students have disabilities. This can be expensive.
- Recorded broadcasts may require closed captioning and transcripts. Creation of these items may delay the time between making the recording and broadcasting it. This can also be expensive and/or require a specialist to create.

Recorded media

- Description:
  - One-way, asynchronous communication.
  - Recordings that are provided to present a specific piece of information, content, task, or performance. Recordings can be edited, spliced, compiled, or remixed before finalizing. These can be posted online in LMS's or websites, emailed directly to individuals, or compiled and saved on DVDs, CDs, or other electronic storage devices, which could be mailed to students or others.
- Characteristics:
  - Recordings can be used to "flip the classroom," provide lectures or supplemental content, provide variety for student engagement and learning, and combined with activities and assessments. Students might be required to create recordings as part of the assessment process or to document activities, skills, or behaviors.
  - Recordings may require captioning, transcripts, scripts, or other forms of accommodation to meet the needs of individuals with disabilities.
- Examples of other types of recordings:
  - Podcasts are audio recordings. Two popular audio recording software programs are Audacity (http://audacity.sourceforge.net/) and Garage Band (http://www.apple.com/ios/garageband/?cid=wwa-us-kwg-features-com).

- *Vodcasts* are video recordings. Videos can be created using digital cameras, video cameras, mobile devices, or video software. Simple videos can be created by adding audio narration to slide presentations in programs such as Microsoft PowerPoint or Apple Presentation. Editing or embellishing can be done with programs such as iMovie (http://www.apple.com/ios/imovie/?cid=wwa-us-kwg-features-com), Adobe Premiere (http://www.adobe.com/products/premiere.html), Camtasia (http://www.techsmith.com/camtasia.html), or Animoto (https://animoto.com/).
- *Screencasts* are video recordings of actions or activities on a computer, and are commonly used for demonstrating how to use software or a specific tool in a program. Snagit (http://www.techsmith.com/snagit.html) Jing (http://www.techsmith.com/jing.html) and Screencast-O-Matic (http://www.screencast-o-matic.com/) are a few of the more popular programs.
- Animated presentations can be created from pictures, slides, or even just text. They can be used to create class announcements or demonstrate social situations and interactions. Examples of online animation programs are XtraNormal (http://www.xtranormal.com/), PowToon (http://www.powtoon.com/), and Voki (http://www.voki.com/).

Lecture capture & streaming video

- Description:
  - Generally considered to be a one-way communication.
  - This can be structured to be either synchronous (live broadcast) or asynchronous (recording).
- Characteristics:
  - These services usually have a CHAT/Instant Messaging feature, but might also require an additional tool (such as audio conferencing) to be set up or provided by a third party.
  - Streaming services are set up by the institution or company providing the course or training; may use contracted services such as MediaSite (http://www.sonicfoundry.com/mediasite) or ECHO360 (http://echo360.com/) that can be integrated directly into the LMS; students do not usually need special software, though there may be apps for mobile devices to enable mobile usage.
  - Streaming is transmitted over the Internet; a reliable, high-speed Internet access and provider are required.
  - Reception of streaming has set technology requirements on computer connectivity, memory availability, processing speed, and internal storage. Not all students will have this equipment.

- May be streamed live or from a recording.
- Generally the recordings are provided after a live streaming session as well. This allows for students to review the lesson and may assist with better comprehension.
- Live streaming may require live captioning services or sign language service if students have disabilities. This can be expensive.
- Recorded streaming may require closed captioning and transcripts. Creation of these items may delay the time between making the recording and broadcasting it. This can also be expensive and/or require a specialist to create.

- Examples:
  - ECHO360 (http://echo360.com/)
  - Mediasite (from Sonic Foundry) (http://www.sonicfoundry.com/)
  - Kaltura (https://catturavideo.com/kaltura)
  - Panopto (http://panopto.com/)

Video Conferencing

- Description:
  - Two-way, synchronous communication (includes both audio and video).
  - Uses VoIP and streaming Internet services; however, it must be run through a third-party communications provider.

- Characteristics:
  - Connections can be set up for room-to-room participation or room-to-individual(s) participation. Multiple parties may be simultaneously connected, though there may be a limit on the number of connections (end points) available.
  - Requires a "bridge" service (a manually programmed and monitored service); usually expensive and costs are charged per connection or per time use. Institutions or companies will generally contract this service; students may need special software, which may or may not be provided by the institution.
  - Not available in many areas; requires reliable, high-speed bandwidth when transmitted or received over the Internet; requires specialized equipment when transmitted or received through communication services such as phone systems.
  - This is the closest medium to being in the same room with everyone; simulates the traditional classroom.
  - Participants can monitor activities, actions, skills, mannerisms, and body language of the rest of the group. This is effective for instructors when checking for understanding or practice of skill development.

- May require live captioning services or sign language service if students have disabilities. This can be expensive.
- May require additional technical support.

Web Conferencing

- Description:
  - Two-way, synchronous communication (primarily audio, though some services provide video via webcams as well).
  - Session is transmitted over the Internet; a reliable, high-speed Internet access and provider are required.
  - Web conferencing is rapidly becoming the most frequently used communication or online training/teaching platform because it integrates a variety of tools and media.
- Characteristics:
  - Use of specialized software or Internet platform required (this incurs licensing costs). Institutions or companies usually procure the licensing for faculty and students.
  - Each platform has set technology requirements on computer connectivity, memory availability, processing speed, and internal storage. Not all students will have this equipment.
  - Has technology apps for most mobile devices, so students may participate from anywhere they have an Internet connection. Some apps do not have full use of all the tools included in the platform.
  - Common tools within the service are: chat, whiteboard with writing and drawing features, slide presentation area, screen or application sharing, ability to upload and transfer files, remote desktop control, recording feature, participant annotation, audio sharing with multiple simultaneous speakers, media player options, and some have breakout-rooms or channels for small group collaborations.
  - May be transmitted live or from a recording. Recordings can be done by individuals or groups and then posted for the rest of the class.
  - Generally the recordings are provided after a live session as well. This allows for students to review the lesson and may assist with better comprehension.
  - Live sessions may require live captioning services or sign language service if students have disabilities. This can be expensive.
  - Recorded sessions may require closed captioning and transcripts. Creation of these items may delay the time between making the recording and broadcasting it. This can also be expensive or require a specialist to create.

- Examples:
  There are many other web conferencing providers on the Internet; this is just a few of the top-rated or used products.
  - Blackboard Collaborate (http://www.blackboard.com/Platforms/Collaborate/Overview.aspx)
  - Adobe Connect (http://www.adobe.com/products/adobeconnect.html)
  - WebEx (http://www.webex.com/)
  - GoToMeeting (http://www.gotomeeting.com/online/start); company also has two other versions—GoToWebinar and GoToTraining
  - Fuze (https://www.fuze.com/)
  - Onstream Meetings (http://www.onstreammedia.com/meetings.php)
  - WizIQ (http://www.wiziq.com/)
  - Microsoft Lync (http://products.office.com/en-us/lync/lync-2013-video-conferencing-meeting-software)
  - Skype (http://www.skype.com/en/)
  - Google Hangouts (http://www.google.com/+/learnmore/hangouts/)
  - FaceTime (http://www.apple.com/mac/facetime/)

Collaboration or Social Networking.

Garton, Haythornthwaite, and Wellman (1997) describe a social network as "a set of people (or organizations or other social entities) connected by a set of social relationships, such as friendship, co-working or information exchange" (para. 1). There are numerous electronic forms of social networking than might be utilized in teamwork, group projects, or full class activities. Effective collaboration, especially among people with different cultural backgrounds or values, is one of the most critical skills in demand by employers and one of the skills most frequently found lacking in college graduates (Hart Research Associates, 2015). Collaboration spaces can also contain file repositories.

Social Networking:

- Description:
  - Two-way, asynchronous communication; one-to-many and many-to-one.
  - Online hosted services that require each individual member to set up a user profile; some parts of the profile may be kept private; profiles usually contain basic personal/professional contact information, biographical information, likes or dislikes or "favorites," pictures, and can have URLs for personal websites.

- Characteristics:
  - Service sites may contain numerous "pages" with a variety of text and media content. Sites have tools that allow for comments from others; commenting back and forth (posting) can provide discussions or collaborative efforts.
  - Most services allow for posting of images and links to other websites; some services allow for uploading files to share (documents, pictures, media, etc.).
  - Many social networking services provide tracking for areas of interest, allowing individuals with common interests to find and connect to each other.
  - There are hundreds of social networking sites, with several starting out every day. As of February 23, 2015, Wikipedia's "List of social networking websites" included 211 major websites (http://en.wikipedia.org/wiki/List_of_social_networking_websites). A 2015 Pew Research Center report stated that over 52% of all adults online currently use two or more social networking sites, which shows the comfort and interest many adults have in connecting and communicating in this format (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015).
- Examples:
  - Facebook (https://www.facebook.com/)
  - LinkedIn (https://www.linkedin.com/)
  - Pinterest (https://www.pinterest.com/)
  - Instagram https://instagram.com/)
  - Twitter (https://twitter.com/)
  - Google+ (http://www.google.com/+/learnmore/)
  - Vine (https://vine.co/)

Online Communities:

- Description:
  - Two-way, asynchronous communication; one-to-many, many-to-many, and many-to-one.
  - Online hosted services require each individual to become a member and set up a user profile similar to that of social networking. Social networks are sometimes considered to be a subset of online communities.
- Characteristics:
  - A community is based on a common interest, profession, or topic. This allows members to meet/network, share information and resources, provide support, and collaborate on projects.

- Professional and academic communities allow members to post their professional work, discuss and share research, locate and connect with peers, recommend papers and publications, recruit for jobs, search for employment, and keep up with current trends or new findings (Van Noorden, 2014).
- Originally used Bulletin Boards, List-serves, and Discussion Boards, current forms include those three plus blogs, vlogs, wikis, specialized websites, instant messaging platforms, social bookmarking, photo and media sharing sites, gaming platforms, fantasy and virtual worlds. A few of these community types may also be classified in other areas.
- For a list of a variety of virtual communities see the wiki list at http://en.wikipedia.org/wiki/List_of_virtual_communities. (See appendices for recommended books on this topic.)

Collaboration platforms:

- Description:
  - Two-way, asynchronous communication; one-to-many, many-to-many, and many-to-one. Can also be synchronous if creating or editing is done simultaneously by several individuals.
  - A website or Internet location where files can be created, stored, shared, or edited.
- Examples:
  - *Wikis* are websites that are created and edited by more than one person. They can be private or public, house creative endeavors, act as a repository for resources (such as other website listings) on a specific topic, or provide a comprehensive compilation of information on a content area or discipline. The most famous wiki is Wikipedia, which contains thousands of web pages that are edited by anyone who wants to contribute. Two examples to explore are Wikispaces (https://www.wikispaces.com/ and PBWorks (http://www.pbworks.com/education.html). (See resource list in appendices.)

- Google Apps: Drive and Sites. Google provides a variety of applications and tools for collaboration, file creation, and file sharing. Google spaces may be public or housed under an institution or corporate infrastructure. Many K-12 and postsecondary educational institutions have their own Google platforms, which provide more security and privacy for students and employees. Google Sites are web pages on the Google platform that can be individually created and then shared for comments and review, or can be shared for creation and editing. Google Drive is an Internet virtual store drive that can store any type of electronic files. Google Drive also has its own software suite of basic programs: Documents, Spreadsheets, Presentations, and Forms. Students can use these programs to author work and then share it with others for editing and collaborating. The collaborative efforts can be synchronous, asynchronous, or both.
- VoiceThread (VT) (http://voicethread.com/) is an asynchronous presentation and collaboration tool. The VT files are called voicethreads and can contain a variety of file and media types all collated into one presentation voicethread. Narration and comments can be added in text, audio, or video formats. Others can then add comments and questions, thus creating a media discussion forum. The video and audio commentary conveys ideas better than written text since emotions and inflections are included when using the other senses. VT can create a sense of presence and community among the participants, which allows students to feel more connected and included as they would in a physical face-to-face classroom. Research articles about VT and media discussion forums can be found on their Higher Education page (http://voicethread.com/products/highered/).

Matching Strategies and Tools

Selecting the most effective technology or tool for teaching or providing support online requires that the objectives and assessments have been determined first. The pedagogy/andragogy should *always* drive the technology. To help match up the teaching and the tools, the chart on the following page is available for organizing information and making decisions. The first row of the chart has been filled in with an example.

A Planning Chart for Aligning Teaching and Technology

Skill		Teaching Alignment		Technology Tool or Technique		
Identify	**Soft or Hard**	**Objective**	**Assessment**	**Timing**	**Communication / Content**	**Collaboration**
Communication & Teamwork (Sample example)	*Soft skill*	*Demonstrate active listening and appropriate response*	*Role play for Customer Service Desk (Rubric & Peer Observation checklist)*	*Synchronous* *Synch. & Asynch.*	*Web conference,* *Demonstration videos*	*Use breakout rooms for pair-share & small group* *Students create in pairs, record, and then analyze in report writing*

Use this chart to help determine the appropriate technologies and tools to use for developing skills in each course or unit. Start with the overall skills and outcomes for the course.

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Appendix A-1 - SCANS Competencies

The U.S. Department of Labor's Secretary established the Secretary's Commission on Achieving Necessary Skills (SCANS) in February 1990 to determine the current needs of the workplace and the readiness of the workforce to meet those needs. Published in 1991, the initial report, *What work requires of schools: A SCANS report for America 2000,* categorized five competencies and a three-part foundation describing the skills, attributes, and values needed in future workforce employees.

(SCANS, 1991, Figure B, pg. 10, http://wdr.doleta.gov/SCANS/whatwork/whatwork.pdf)
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FIVE COMPETENCIES

Resources: Identifies, organizes, plans, and allocates resources

A. *Time* & Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules
B. *Money* & Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
C. *Material and Facilities* & Acquires, stores, allocates, and uses materials or space efficiently
D. *Human Resources* & Assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

A. Participates as a Member of a Team & contributes to group effort
B. Teaches Others New Skills
C. *Serves Clients/Customers* & works to satisfy customers' expectations
D. *Exercises Leadership* & communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
E. *Negotiates* & works toward agreements involving exchange of resources, resolves divergent interests
F. *Works with Diversity* & works well with men and women from diverse backgrounds

Information: Acquires and uses information

A. Acquires and Evaluates Information
B. Organizes and Maintains Information
C. Interprets and Communicates Information
D. Uses Computers to Process Information

Systems: Understands complex inter-relationships

A. *Understands Systems* & knows how social, organizational, and technological systems work and operates effectively with them
B. *Monitors and Corrects Performance* & distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
C. *Improves or Designs Systems* & suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

A. *Selects Technology* & chooses procedures, tools or equipment including computers and related technologies
B. *Applies Technology to Task* & Understands overall intent and proper procedures for setup and operation of equipment
C. *Maintains and Troubleshoots Equipment* & Prevents, identifies, or solves problems with equipment, including computers and other technologies.

Appendix A-2 - SCANS Three-part Foundation

(SCANS, 1991, Figure C, pg. 14, http://wdr.doleta.gov/SCANS/whatwork/whatwork.pdf)
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A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

A. *Reading* — locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules
B. *Writing* — communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts
C. *Arithmetic/Mathematics* — performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
D. *Listening* — receives, attends to, interprets, and responds to verbal messages and other cues
E. *Speaking* — organizes ideas and communicates orally

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn and reasons

A. *Creative Thinking* — generates new ideas
B. *Decision Making* — specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative
C. *Problem Solving* — recognizes problems and devises and implements plan of action
D. *Seeing Things in the Mind's Eye* — organizes, and processes symbols, pictures, graphs, objects and other information
E. *Knowing How to Learn* — uses efficient learning techniques to acquire and apply new knowledge and skills
F. *Reasoning* — discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

A. *Responsibility* — exerts a high level of effort and perseveres towards goal attainment
B. *Self-Esteem* — believes in own self-worth and maintains a positive view of self
C. *Sociability* — demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
D. *Self-Management* — assesses self accurately, sets personal goals, monitors progress, and exhibits self-control
E. *Integrity/Honesty* — chooses ethical courses of action

Appendix A-3 - Alaskan Employers Expectations

In an initiative from the Alaska Department of Labor and Workforce Development and the Alaska Department of Education and Early Development, Alaskan employers, community members, parents, educators, and other state youth agencies compiled a list of the skills Alaskan employers wanted in their employees. These characteristics are grouped into three categories: Skills, Attitudes, and Work Ethic. (http://www.careerready.alaska.gov/docs/career-info/wantcareer-poster.pdf)

Want a Great Career?

Alaskan Employers Expect:

Skills/Competencies

Reading
Able to comprehend written material and take appropriate action

Speaking
Expresses ideas clearly and concisely to individuals and in groups; has good customer communication skills; gives clear directions.

Writing
Spells correctly; writes legibly; express ideas clearly and concisely; write a business letter, & fill out forms properly.

Listening
Able to comprehend what is said and take action.

Math Computation
Able to apply basic skills with accuracy in addition, subtraction, division, multiplication and use of fractions and percentages to accomplish work.

Problem Solving
Can identify source of problem; demonstrates good common sense; is creative and innovative.

Information Management & Technology
Able to use computers to process information; familiar with common technology applications & tools in the workplace.

Knowing How to Learn
Able to teach oneself new skills; able to seek and use new information appropriately.

Applying What is Learned
Possesses various skills including the more complex kinds of thinking, such as reasoning, analysis, and problem solving.

Working with Others
Able to work as a productive team member; able to share information.

Business Process
Eager to learn the principles of business

Looking for Work
Able and confident to identify job opportunities, to complete a job application, to prepare a résumé, and to promote himself/herself during an interview.

Work Attitudes

Responsible/Self-Disciplined
Is a self-starter; is committed to and accountable for work assigned; does not just do the bare minimum to get the job done; is loyal to the employer.

Willing to Learn/Pride in Doing a Good Job
Is flexible, willing, and able to respond to change in work assignments or learn new technology and new ways of doing things; is willing to do the job over until he/she gets it done right.

Safety-Conscious
Always thinks about safety in every aspect of the job; takes responsibility for his/her own actions and notices and corrects unsafe situations in the workplace; does not always have to be told to use safe procedures; concerned for the safety of others.

Manages Stress and Personal Problems
Deals with job pressures in a positive way; does not let personal problems interfere with getting the work done, either by being distracted at work or by failing to come to work or come on time.

Positive Outlook
Views the good in situations and works constructively to solve problems; has a positive self-image; is self-confident; sets personal goals.

Follows Rules
Performs tasks in the prescribed manner; doesn't break rules but will help to change rules if they should be changed.

Good Team Member
Shares information; works well and credits (praises) other workers; puts the team above personal interests.

Respects Others
Has good manners; shows common courtesy; appreciates multicultural diversity.

Willing to Earn Reward
Able to see long term results of efforts on the job and put in time and effort before expecting a promotion.

Work Values ("Work Ethic")

Honesty and Integrity
Bases actions on a personally held set of values; can be trusted to follow the rules even when supervisors are not present; keeps his/her word.

Good Manners
Always shows courtesy and respect toward others.

Accepts Advice, Supervision, Criticism
Has high self-esteem and does what is asked; accepts criticism and uses it to improve.

Dependability/Follows Through
Works diligently to complete the tasks, alerts supervisor to problems or delays so that there are no surprises about work not being done.

Good Attendance/On-time
Can be depended upon to be at work except for good reasons, such as illness or death in the family; ready to begin work on time.

Accuracy of Work/No Waste
Is careful and avoids mistakes; if mistakes are made, will correct the errors; takes pride in work well done; holds high standards.

Pride & Productivity in Work
Shows initiative; is ambitious; figures out how to get the job done; works as efficiently as possible to get the job done –well.

These critical skills, values, & attitudes were identified by CEOs, personnel directors, and other employer representatives, and revised by Alaska's Youth: Ready for Work following review by parents, educators, students, and other community members.

APICC
Alaska Process Industry Careers Consortium
http://www.apicc.org

ALASKA QUALITY SCHOOLS INITIATIVE
High Student Academic Standards and Assessment
Family, School, Business and Community Network
Quality Professional Standards
School Excellence Standards

Industry Skills Coalition
ALASKA'S INDUSTRY CONNECTION FOR A SKILLED PROFESSIONAL WORKFORCE

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Appendix A-4 - Bloom's Taxonomy for the Affective Domain

This table of values and characteristics was compiled by Don Clark and is used with permission (http://www.nwlink.com/~donclark/hrd/Bloom/affective_domain.html). The categories and examples are listed from the simplest behaviors at the top to the most complex at the bottom.

Category	Example and Key Words (verbs)
Receiving Phenomena: Awareness, willingness to hear, selected attention.	**Examples**: Listen to others with respect. Listen for and remember the name of newly introduced people. **Key Words**: acknowledge, asks, attentive, courteous, dutiful, follows, gives, listens, understands
Responds to Phenomena: Active participation on the part of the learners. Attend and react to a particular phenomenon. Learning outcomes may emphasize compliance in responding, willingness to respond, or satisfaction in responding (motivation).	**Examples**: Participates in class discussions. Gives a presentation. Questions new ideals, concepts, models, etc. in order to fully understand them. Know the safety rules and practice them. **Key Words**: answers, assists, aids, complies, conforms, discusses, greets, helps, labels, performs, presents, tells
Valuing: The worth or value a person attaches to a particular object, phenomenon, or behavior. This ranges from simple acceptance to the more complex state of commitment. Valuing is based on the internalization of a set of specified values, while clues to these values are expressed in the learner's overt behavior and are often identifiable.	**Examples**: Demonstrates belief in the democratic process. Is sensitive towards individual and cultural differences (value diversity). Shows the ability to solve problems. Proposes a plan to social improvement and follows through with commitment. Informs management on matters that one feels strongly about. **Key Words**: appreciates, cherish, treasure, demonstrates, initiates, invites, joins, justifies, proposes, respect, shares
Organization: Organizes values into priorities by contrasting different values, resolving conflicts between them, and creating a unique value system. The emphasis is on comparing, relating, and synthesizing values.	**Examples**: Recognizes the need for balance between freedom and responsible behavior. Explains the role of systematic planning in solving problems. Accepts professional ethical standards. Creates a life plan in harmony with abilities, interests, and beliefs. Prioritizes time effectively to meet the needs of the organization, family, and self. **Key Words**: compares, relates, synthesizes
Internalizes Values (characterization): Has a value system that controls their behavior. The behavior is pervasive, consistent, predictable, and most important characteristic of the learner. Instructional objectives are concerned with the student's general patterns of adjustment (personal, social, emotional).	**Examples**: Shows self-reliance when working independently. Cooperates in group activities (displays teamwork). Uses an objective approach in problem solving. Displays a professional commitment to ethical practice on a daily basis. Revises judgments and changes behavior in light of new evidence. Values people for what they are, not how they look. **Key Words**: acts, discriminates, displays, influences, modifies, performs, qualifies, questions, revises, serves, solves, verifies

Appendix A-5 - Teaching Resources Sampler:

Books for teaching

Understanding by Design, Expanded 2nd Edition (2005), Grant Wiggins and Jay McTighe, Association for Supervision and Curriculum Development (ASCD), ISBN-13: 860-1401253754, ISBN-10: 0131950843

The Understanding by Design Guide to Creating High-Quality Units (2011), Grant Wiggins and Jay McTighe, Association for Supervision and Curriculum Development (ASCD),
ISBN-13: 978-1416611493, ISBN-10: 1416611495
Note: this book has been used in several graduate CTE teaching methods courses at the University of Alaska and other universities.

Essential Questions: Opening Doors to Student Understanding (2013), Grant Wiggins and Jay McTighe, Association for Supervision and Curriculum Development (ASCD),
ISBN-13: 978-1416615057, ISBN-10: 1416615059

Creating Significant Learning Experiences, Revised and Updated: An Integrated Approach to Designing College Courses (2013), L. Dee Fink, Jossey-Bass, part of the Jossey-Bass Higher and Adult Education: Teaching, Learning & Curriculum series
ISBN-13: 978-1118124253, ISBN-10: 1118124251

Assessing 21st Century Skills: A Guide to Evaluating Mastery and Authentic Learning (2012) [Kindle Edition], Laura M. Greenstein. Print version: Corwin Press
Print ISBN-13: 978-1452218014, Print ISBN-10: 1452218013

Books for online teaching

Taking Your Course Online: An Interdisciplinary Journey (2012), Kathleen M. Torrens and Jose A. Amador, Editors, Information Age Publishing, Inc.
ISBN-13: 978-1617355936, ISBN-10: 1617355933

Conquering the Content: A Blueprint for Online Course Design and Development, 2nd Edition (2014), Robin M. Smith, Jossey-Bass; part of the Jossey-Bass Higher & Adult Education: Online Teaching & Learning series
ISBN-13: 978-1118717080, ISBN-10: 1118717082

A Guide to Online Course Design: Strategies for Student Success (2014), Tina Stavredes and Tiffany Herder, Jossey-Bass, part of the Jossey-Bass Higher and Adult Education: Teaching, Learning & Curriculum series
ISBN-13: 978-1118462669, ISBN-10: 1118462661

Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms, Third Edition (2010), Will Richardson, (new edition scheduled for release late in 2015)
ISBN-13: 978-1412977470, ISBN-10: 1412977479

Learning Online with Games, Simulations, and Virtual Worlds: Strategies for Online Instruction (2009), Clark Aldrich, Jossey-Bass; part of the Jossey-Bass Higher & Adult Education: Online Teaching & Learning series
ISBN-13: 978-0470438343, ISBN-10: 0470438347

Using Wikis for Online Collaboration: The Power of the Read-Write Web (2009), James A. West & Margaret L. West. San Francisco, CA: Jossey-Bass; part of the Jossey-Bass Higher & Adult Education: Online Teaching & Learning series
ISBN-13: 978-0470343333, ISBN-10: 0470343338

Book series

Jossey-Bass Higher and Adult Education: Teaching, Learning & Curriculum series, http://www.wiley.com/WileyCDA/Section/id-812152.html?sort=FEATURED&sortDirection=DESC
This series contains 175 books and journals related to adult and higher education.

Jossey-Bass Higher & Adult Education: Online Teaching & Learning series, http://www.wiley.com/WileyCDA/Section/id-814784.html?sort=FEATURED&sortDirection=DESC
This series contains 14 books, each covering a different aspect of online teaching and learning.

Websites

Association for Career & Technical Education (ACTE), http://www.acteonline.org/
"The Association for Career and Technical Education is the largest national education association dedicated to the advancement of education that prepares youth and adults for careers. It's our mission is to provide educational leadership in developing a competitive workforce." The website provides a wealth of resources on career and technical education issues and topics.

Employability Skills Framework, http://cte.ed.gov/employabilityskills/

"The Employability Skills Framework was developed as part of the *Support for States Employability Standards in CTE and Adult Education* project, an initiative of the Office of Career, Technical, and Adult Education, U.S. Department of Education." This site compares the results of numerous employability skills surveys, identifies critical skills needed for workplace employment (applied knowledge, effective relationships, and workplace skills), and provides a cross-walk for employability, academic, and technical skills.

MERLOT II (Multimedia Educational Resource for Learning and Online Teaching), http://www.merlot.org/merlot/index.htm

"MERLOT is a curated collection of free and open online teaching, learning, and faculty development services contributed and used by an international education community." "The MERLOT collection consists of tens of thousands of discipline-specific learning materials, learning exercises, and Content Builder web pages, together with associated comments, and personal collections, all intended to enhance the teaching experience of using a learning material." [Descriptions quoted from the website.]

*O*NET Resource Center*, http://www.onetcenter.org/overview.html

"The O*NET program is the nation's primary source of occupational information. Central to the project is the O*NET database, containing information on hundreds of standardized and occupation-specific descriptors." The website database uses "descriptors"—key characteristics, standards, and measurable competencies of knowledge, skills, and abilities for each job—for every career and job in the 16 Career Clusters.

Assessment and Teaching of 21st Century Skills, https://www.class-central.com/mooc/1750/coursera-assessment-and-teaching-of-21st-century-skills

This is a free online course (MOOC) delivered on Class Central, the open educational resource for Coursera. The course is taught by Esther Care and Patrick Griffin from the University of Melbourne, Australia. "Learn about ways to **assess and teach** new and emerging **21st century skills**: we cover the nature of these **skills**, methods of **assessment**, and more." This course has set starting dates and is instructor paced.

Partnership for 21st Century Skills: Educators' site, http://www.p21.org/our-work/resources/for-educators

This site is aimed primarily at K-12 public education reform, but has some useful information and resources. Their "documents have been developed through a comprehensive process involving thorough input from partners, educators, researchers, organizations and businesses across the country." All files are in PDF format and available to download.